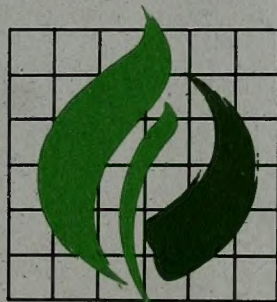


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**Conservation & Utilisation
of the Plant Genetic Resources of
Mexico and Central America**

Project Progress Report

March 1995



**WORLD CONSERVATION
MONITORING CENTRE**



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The mission of the
World Conservation Monitoring Centre is to provide
information on the status, security and
management of the Earth's biological diversity.



Contents

Information included in this report has been gathered as part of a project on the Conservation and Sustainable Utilisation of the Crop Genetic Resources of Central America and Mexico, funded by the Darwin Initiative of the British Government. Workshop costs were met by a grant from the Swedish International Development Authority (SIDA).

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About WCMC



WORLD CONSERVATION
MONITORING CENTRE

*The World Conservation Monitoring Centre provides
information services on the conservation and sustainable use of
species and ecosystems and supports others in the development of their own
information systems*

WCMC is internationally recognised as a centre of excellence in the handling and management of information on the conservation of biodiversity. The Centre has more than 12 years' experience in this field, providing advice and information services not only to its three founder organisations, IUCN - The World Conservation Union, the World Wide Fund for Nature (WWF) and the United Nations Environment Programme (UNEP), but also to development aid agencies, UN agencies, international convention secretariats, government and non-governmental organisations, the media, commerce and industry.

WCMC is a non-profit organisation, independent of government funding and public membership. Occupying a new, purpose-built, building in Cambridge, WCMC is a highly professional organisation with full project development and management capabilities. WCMC employs some 60 professional staff, with a wide range of international experience.

Key skills include:

- development and provision of information services
- information management on:
 - species and habitats of conservation concern
 - protected areas
 - international conservation agreements and programmes
- locating information from other sources worldwide
- systems analysis
- database design and management
- map based Geographical Information Systems (GIS)
- computer communications

Annually WCMC delivers upwards of 30 projects, as well as providing regular information services for a wide range of clients. WCMC's project portfolio of over 100 projects, in execution or development, builds on the Centre's resources and staff experience and is centred upon the main aims of the Centre, which are to provide:

Information Services:

based on programmes of analyses, compilation and assessment

Technical Assistance:

based on experience in information management

WCMC has significant experience in the development of information services required by the users of biodiversity data. For example, WCMC provides information services to:

- the *Convention on International Trade in Endangered Species* Secretariat and several Contracting Parties including the EU
- IUCN and UNESCO on *World Heritage*
- IUCN's expert networks on species and protected areas.
- UNEP and the *Convention on Biological Diversity*

In addition, WCMC has been collaborating with British Petroleum Company plc to develop an advanced map-based information management system - the *Biodiversity Map Library*. This system aims to facilitate access to computer maps and the databases linked to them, providing non-expert users much of the power of a computer GIS, without requiring them to be familiar with GIS software and technology. This database offers an advanced take-off point for further projects in this area.

WCMC has been very active in supporting development of in-country information management, and is the hub of a network of organisations preparing guidelines and materials for capacity building. These activities build on an earlier collaboration between WCMC and UNEP on the development of *Guidelines for Country Studies on Biological Diversity*. They are to provide the support necessary for developing and implementing the national biodiversity strategies and action plans called for by the *Convention on Biological Diversity*. WCMC activity in this area is likely to increase significantly over the next few years.

WCMC works to a three-year programme, reviewed annually by its international management board. The programme identifies the wide range of activities being undertaken by the Centre, most of them in collaboration with a wide range of national and international organizations. The programme also charts the general direction in which the Centre is moving, while providing sufficient flexibility to encompass new services which fall within the Centre's mission. WCMC actively seeks new opportunities.

The WCMC Board comprises: Chairman - Rudolph Agnew, a prominent British businessman; Anthony Brough, former Assistant Executive Director of UNEP; Sir Martin Holdgate, President of the Zoological Society of London; Dr Claude Martin, the Director of WWF International; Professor Reuben Olembo, UNEP Office of the Environment Programme; Professor Adrian Phillips, Chairman of IUCN Commission on National Parks and Protected Areas; and Dr Robin Pellew, Director of WWF UK. Dr N. Mark Collins, Director of WCMC, acts as Secretary to the Board.

For further information, please contact:
The Information Officer
World Conservation Monitoring Centre
219 Huntingdon Road
Cambridge CB3 0DL, United Kingdom

Tel: +44 (0)1223 277314
Fax: +44 (0)1223 277136
e-mail: info@wcmc.org.uk

WCMC Conservation Information Service is sponsored by the BT Community Programme

Conservation and sustainable utilisation of the plant genetic resources of Mexico and Central America

Report of Workshop
CATIE, Turrialba, Costa Rica 17-20 October 1994

This report provides a brief summary of the discussions and agreements reached at the Workshop, convened by WCMC and hosted by CATIE, to discuss implementation of the project *Conservation and sustainable utilisation of the plant genetic resources of Mexico and Central America*. A copy of the agenda of the meeting forms Annex 1 of the report and the participant list, forms Annex 2. The meeting was sponsored by the UK Government, through the Darwin Initiative, and the Swedish International Development Agency.

Monday 17 October

Morning Session

Introductory remarks

The meeting was opened by **Sara Oldfield** (Chair) who welcomed participants to the workshop on behalf of WCMC. She pointed out that WCMC saw the Workshop as a great opportunity to develop a new initiative focusing on *in situ* conservation of wild populations of crop plants, wild relatives and wild resource species of ethnobotanic importance. A major aim of the project should be to link expertise from different sectors and to link information from a wide range of sources to facilitate biodiversity conservation.

Rafael Ocampo welcomed participants on behalf of CATIE.

Oscar Gomez provided a brief update on the activities of REMERFI.

Harriet Gillett gave a presentation on the work of WCMC, with a focus on the work of the Plants Programme.

Presentation of background documents

Sara Oldfield gave a brief introduction to the project and presented a series of working documents and maps prepared for discussion and review by the Workshop.

Working Documents:

- 1 Project Overview, describing aims, objectives and proposed activities.
- 2 Report on the feasibility meeting held at WCMC in March to refine the scope of the project. This meeting agreed a series of recommended outputs for the current Workshop and the following Working Documents present the results of those recommendations.
- 3 Summaries (in English and Spanish) of project activities undertaken, including preliminary ideas for follow-up activities. This document was presented as a key paper for use in setting priorities during the Workshop.

- 4 Contact list of people and institution involved in work related to the project. The list was based on replies to a questionnaire sent out as part of the project.
- 5 Summary of information on REMERFI priority species.
- 6 Brief review of *in situ* conservation focusing mainly on existing documentation for wild resource species and wild relatives.
- 7 Review of database applications and data transfer formats. It includes details of a survey of relevant databases undertaken for the project.
- 8 Maps. A series of maps showing point location for selected species (*Manihot*, *Chrysophyllum*, *Manilkara*, *Solanum*), mapped from herbarium specimens and regional *Floras*, overlaid on habitat information contained within the Biodiversity Map Library at WCMC.

Comments and additional information were invited from participants on Working Documents 3 - 8. Updated versions, incorporating this data will be circulated to participants.

The Chair summarised the objectives of the meeting:

- 1 To discuss information requirements for *in situ* conservation planning.
- 2 To review existing information on plant genetic resources *in situ*.
- 3 To develop a funding proposal for the field implementation phase of the project.

Discussion

Following the introduction of the project a general discussion was held on information requirements for *in situ* conservation planning.

Trevor Williams emphasised the need to establish ground rules by deciding the units for *in situ* conservation, and defining which information needs are a priority.

He suggested four strategic points for discussion:

- 1 The need to decide priorities
- 2 The need for units of conservation, for example, spatial x taxon
- 3 The need for estimates of population management
- 4 The need for conservation to be effective

Mikkel Grumm questioned what was meant by *in situ* conservation in the context of this project and whether this would include "on farm" conservation.

Sara Oldfield replied that in the preparatory work, WCMC had concentrated on *in situ* conservation of wild species, but there was a need for further discussion on this point.

Bruce Benz cited the case of teosinte, which needs human intervention in order to be conserved, and pointed out that this would also be the case with other crop species such as beans, rice, *Capsicum*, *Ipomoea*, and *Arachis*. He suggested that there should not be a distinction between cultivated and spontaneous forms.

Gerardo Budowski pointed out that there may be some traditionally cultivated species with high diversity which need conserving and effective management. CGIAR has considered the approach of selecting areas for conservation which have traditional farming techniques. It would not be feasible to conserve all species, but a few could be selected. He also cited the threat posed by new improved species to biodiversity in the wild.

It was agreed that wild plants of cultivated species and wild relatives should be given the highest priority for *in situ* conservation but that the emphasis should not exclusively be on wild material.

It was also agreed that *in situ* conservation should be at the population level. **Trevor Williams** explained that the concept of spatial x taxon as genetic resource management units (GRMU) could be useful.

Gerardo Budowski pointed out that the spatial x taxon concept was appropriate for wild units, but for semi-cultivated units, taxon x spatial x human intervention was needed for example for teosinte in Mexico; the potato in Peru; and wild legumes and lentils in Turkey.

Sara Oldfield suggested that information was needed to set priorities for *in situ* conservation both in the selection of taxa and geographical areas.

Daniel Debouck said that for target taxa there was a need to bring together three different fields of information in order to prepare a planning tool: floristic data; information from *ex situ* germ plasm banks; and information related to habitat conservation, for example, threats and protection status. The aim should be to link these three data sets into computerised systems.

It was agreed that this provided a practical basis for developing appropriate information systems which could cover both wild and cultivated taxa.

It was agreed that there is currently very little overlap between floristic information and data on *ex situ* collections. In general those working in floristic botany are not interested in weedy material.

It was also pointed out that floristic information generally lacks ecological data reflecting ecotypic variation across a floristic area.

Gerardo Budowski emphasised the value of data on pollinators and distributors.

Bruce Benz suggested that collectors should be encouraged to record certain types of information. All habitats are in a rapid state of change and information on degree of human intervention needs to be recorded, in part, so as to assess which plant material will remain available for further investigation and use.

The value of ethnobotanic information was noted and **Mikkel Grumm** also suggested that it would be valuable to integrate population variability data.

Cirilio Nelson pointed out that the information requirements would depend on the definitions of *in situ* and *ex situ* conservation followed.

It was agreed that *in situ* conservation could include a range of techniques to conserve the taxon within its original habitat, including propagation and planting.

Kerry Walter emphasised the considerable overlap in scope between *in situ* and *ex situ* conservation with techniques being selected according to the particular taxon or population. On farm conservation could be integrated into particular conservation strategies.

Afternoon session

Sara Oldfield introduced the REMERFI listing of priority taxa, and suggested that it may be necessary to define the information needs for each taxa. She asked if herbarium data can be taken as a useful starting point.

Daniel Debouck replied that it was the best current starting point and that the value of the data would be enhanced by integration with the other data sets discussed in the morning session.

Patricia Davila Aranda described the role of the Herbarium at UNAM in coordinating preparation of Flora Mesoamericana and mentioned the increasing computerisation of herbarium records. She emphasised the need to check the taxonomy of plant specimens when entering geographical coordinates into data bases. UNAM is using BRAHMS with some modifications.

Gerardo Budowski emphasised that in some areas herbaria do not have the capacity to computerise data. There is a need to share geographical data and make this accessible to all users.

Cyrilio Nelson pointed out that in Honduras, information is in the herbarium cabinets and this is ready to enter into databases. The BRAHMS programme will be utilised.

Martin Mitré reported that in Panama integration of data held by the herbaria and by ANCON is now beginning but is an immense task. He stressed the need for regional compatibility between databases.

Bruce Benz asked about the relevance of old data in herbaria.

It was agreed that recollection of herbarium plant material may be necessary within the project and that in modernising herbarium information it would be worthwhile to incorporate genetic information and also ethnobotanic information.

Ismael Ponciano stressed the need to broaden the discussion to take into account social factors. He agreed that there is a need to modernise and improve technical facilities and to place technical information in the context of sustainable development. He considered that plants should not be selected for *in situ* conservation purely because of their economic value. He also suggested that the private sector might have a role to play.

Tuesday 18 October

Discussions were held within two working groups, one of which considered aspects of *in situ* conservation and the other considered database issues. Reports of the Working Groups are given below.

Report of Working Group 1- *in situ* conservation

Participants:

Daniel G Debouck, Efrain Medina, Juan Jose Alán, Carlos Ramirez, Oscar José Gomez, Martin E Mitre, Gerardo Budowski, Mahinda Martinez, Antonio Mora Q., Ismael Ponciano, Salvador Montez, Bruce Benz, Sara Oldfield

The meeting started with a presentation by Bruce Benz on the Sierra de Manantlán Biosphere Reserve in Mexico. This provided the opportunity to discuss the practicalities of managing plant genetic resources *in situ* in this case study, focusing on *Zea diploperennis*. Within the Sierra de Manantlán BR there are a number of other species of interest to REMERFI including *Stenocereus*, *Annona*, *Dioscorea* and *Spondias*. About 8000 local people continue to grow maize as part of their traditional agriculture and in total about half a million people use some of the resources of the Reserve including water resources.

Bruce Benz emphasised that without the integration of people and traditional land management into conservation of Sierra de Manantlan the valuable plant genetic resources will be lost.

The presentation led to two key areas of discussion;

- 1 The need to represent the interests of local communities as well as the scientific community and to ensure that local people benefit from conservation.
- 2 The need to recognise that in the conservation of species, safety is not guaranteed within protected areas - we still do not know how to conserve natural resources.

With regard to benefits for local people in the case of Sierra de Manantlán, benefits resulting from the creation of the Reserve have mainly been in the form of services, such as improved transport and electricity. In terms of economic benefits there has been very little investment in Sierra de Manantlán by the plant breeding sector. The scientific sector has shown a lot of interest in the reserve but scientists have not generally been good at interacting with local people.

Mahinda Martínez provided information on another Biosphere Reserve, El Cielo BR in Tamaulipas for which a full species inventory and database has been developed. She emphasised the need for caution in declaring reserves and the need to ensure that these function effectively. Within Ei Cielo, tree felling increased when the reserve was created.

Ways to ensure that local people do benefit from conservation of plant genetic resources were discussed noting that the material we want to conserve belongs to the local community. Ideas raised and examples given included development of craft skills in Peten, Guatemala and the taxation on sale of genetic resources.

Jorge Leon explained that in Costa Rica it is planned to set aside 25% of the country for conservation and therefore it is essential to think about needs of people who live there. It is important to think of the long term needs of the people and changes in ecosystems. There must be management.

Jorge Leon pointed out that it is very difficult to generate income from native plant resources when there is enormous marketing pressure from overseas, comparing local fruit drinks to coca-cola.

To conserve germplasm there must be *ex situ* collections, very often material is brought in from forest areas which are about to be felled. Bigger collections of live plants are needed.

In general the protected areas of Costa Rica have been selected for their scenic value rather than on genetic material of species. Increasingly, however, there is an emphasis on biodiversity.

Jorge Leon pointed out that in general the level of information on wild relatives of cultivated plants is extremely poor in Central America and often it is not known which the closest relatives are. There is also a lack of knowledge by local people of the wider values of the plant material they hold.

The group agreed that in planning conservation strategies of genetic resources it is essential to take into account social and economic factors.

The group also agreed that existing protected areas form a logical basis for working on situ conservation of plant genetic resources because they are part of existing legal and social systems.

Existing knowledge of plant resources in protected areas was then considered using the lists of protected areas in Working Document 6. The state of knowledge for each site in Honduras, Guatemala, Nicaragua, Panama and Mexico was noted. This information will be circulated in an updated version of this Document. **Oscar Gomez** pointed out that in Nicaragua efforts have mainly concentrated on re-collection of material of economic importance to form germplasm collections rather than collection of herbarium material.

The Working Group also noted the existing *ex situ* collections within the region and that the fact that information is generally available on the holdings of these collections.

The Group agreed that there is a need for further botanical inventory of protected areas, at present habitats are generally inventoried because they are threatened rather than because they are protected. Financial support will be needed to improve the collection of data on wild plants and for material to be studied by taxonomists.

Considering the REMERFI taxa we noted that in some cases it is possible to state what is known about the genera concerned within particular protected areas. There was not, however, time to consider this in detail during the workshop.

The Working Group reviewed the list of REMERFI taxa making a rapid appraisal of priorities for *in situ* conservation at a national and regional level. The highest priorities at a regional level were considered to be *Persea* spp, Sapotaceae (noting that work is already in progress), *Dioscorea* spp and *Xanthosoma* spp.

Secondary priorities were considered to be *Hylocereus* spp., *Capsicum* spp., Cucurbitaceae, *Manihot* spp. and *Pachyrhizus*

These are preliminary recommendations for the development of a programme and further consultation will be necessary to take into account views of experts in Belize, Costa Rica and El Salvador, not represented in working groups. There are also national priorities which should be considered in relation to national programmes and initiatives.

Report of Working Group 2 - Database issues.

Participants:

Patricia Dávila Aranda, Daniel Debouck, Harriet Gillett, Mikkell Grumm, Oswaldo Tellez Valdez, Jane Villa-Lobos, Kerry S. Walter, Trevor Williams,

The workshop started with a presentation by **Kerry Walter** of Working Document 7 - database issues. A revised copy of document 7, updated to incorporate feedback from the working group will be circulated to all participants for comment. This will ensure full input to design of the work to be implemented in Phase 3 of the project.

Issues discussed and agreed within the working group:

- 1 Database formatting. The central importance of standardised data formatting was recognised, in order to facilitate data exchange. The International Transfer Format for Botanic Garden Records (ITF) was discussed (see section 2.1.2 of Working Document 7). It was agreed that this formed a suitable basis on which to develop an extended format, to include fields appropriate to crop genetic resource conservation. Extending the use of an enhanced ITF to the plant genetic resources community will facilitate exchange of data with the botanic garden community and botanists working in other institutions.
- 2 Development of an appropriate ITF
 - 2.1 **Mikkell Grumm** will continue discussions with Kerry Walter concerning addition of appropriate fields needed for the development of an enhanced ITF.
 - 2.2 Following discussions with Mikkell Grumm, Kerry Walter would represent the workshop at the meeting of Botanic Gardens Conservation International to be held at the end of November 1994, to work on a new version of the ITF. This new version will then be presented at the Fourth International Botanic Gardens Conservation Congress in Perth, Western Australia in September 1995.
- 3 Such an updated ITF should continue to be maintained and updated in the future.
- 4 An ITF should be well publicised.
 - 4.1 The group supported development of good contacts network within the region, covering Mexico and Central America including Belize. Existing networks and newsletters could be used, such as those maintained by the UNAM, Smithsonian Institution, IPGRI, IUCN, BGCI as well as *via* WCMC's network of crop genetic experts established as part of the project.
 - 4.2 The value of Internet connections was recognised, and it was considered this should be encouraged.
- 5 Database standards. Other data standards should be followed where possible. For example the geographic and distribution standards outlined in 2.2 of Working Document 7.
- 6 **Oswaldo Tellez** and **Patricia Dávila** presented results from a survey of herbarium databases throughout Mexico and Central America. The paper is included as Annex ???. This paper was

very helpful in identifying regions and genera for which data is available, and to demonstrate the wide range of computer hardware and software currently in use throughout the region.

- 7 There was a clear demand from throughout the region for good working database systems. Such systems should link the strict botanic garden world to the seed storage/gene bank world. However it was clear that funds were very limited within the region, and although the need for good working systems is recognised, funding is essential before any action can take place.

- 8 **Patricia Davila** stressed that the real need is for a system that has proved to be useful elsewhere. Such a system should be easily adapted where necessary. If a good system was made available it would be widely used and would itself become a standard. It was not felt appropriate to develop further systems - "reinventing the wheel" should be avoided.

- 9 **Training** There was strong support for the need for good training for any computer systems. Such training should be on-going.

- 10 It was accepted that the distinction between *in situ* and *ex situ* conservation was not clear cut, and that it would be most helpful to consider the complete range of conservation options. This would encompass conservation of taxa within their natural habitats, within botanic gardens and living collections such as those held by agricultural research centres, as well as conservation within traditional seed banks.

- 11 **Taxonomic needs.** The need for a good understanding of the taxonomy of the genera of interest was stressed. This is fundamental to any work concerning the distribution of those taxa of interest. It was clear that a serious shortage of taxonomists exists throughout the region (with the possible exception of Costa Rica). For example there are currently only two plant taxonomists in Honduras.

- 12 **Training in taxonomy.** Stress was given to the need for more training within the region for plant taxonomists. The University of Peace in Costa Rica was considered as a possible venue to run training courses, under the direction of Dr Gerardo Budowski (formerly Director General of IUCN).

- 13 Following on from the analysis presented by Patricia Dávila and Oswaldo Tellez, the group spent considerable time discussing species and genera most appropriate for further study in Phase 3 of the project. Although the list previously drawn up by REMERFI was used as a basis for this discussion, other taxa were also discussed. Criteria considered were: the extent to which existing botanical expertise was available within the region; suitability of crop for *in situ* conservation; importance of crop; degree of threat to genepools of wild relatives. A short list was drawn up comprising:

<i>Persea</i>	<i>Dioscorea</i>
<i>Agave</i>	<i>Manihot</i>
<i>Juglans</i>	<i>Cucurbita</i>
<i>Annona</i>	<i>Physalis</i>

- 14 The workshop continued as an informal group after supper with a demonstration of the WCMC BG-BASE database. There was considerable interest in this as a useful basis on which to develop a data management system as outlined in 6 above.

Wednesday 19 October

Reports from the Working Groups

Reports of the Working Groups were presented and used as a basis for discussion on the development of the project. It was agreed that there was a need to give a clear focus to the next phase of the project by selecting key genera for attention. This did not imply that other genera should be neglected in data collection particularly during field work.

It was also agreed that inventory work in protected areas should form an important component of the next phase of the project and that enhancement of the International Transfer Format for data exchange should take into account botanical data requirements of the protected area community.

Taking forward the discussions from the Working Groups, the priority taxa selected were reviewed by the meeting as a whole. Given the degree of overlap in setting species priorities by the two Working Groups, especially given the lack of clear criteria, it was agreed that work should concentrate on the following target taxa during the next phase of the project:

- a) Top priority:
 - Persea*
 - Dioscorea*
 - Cucurbita*
 - Sechium*
 - Manihot*
- b) Second priority:
 - Agave*
 - Annona*
 - Capsicum*
 - Hylocereus*
 - Juglans*
 - Pachyrhizus*
 - Physalis*
 - Xanthosoma*
 - Sapotaceae

Additional priority taxa suggested during discussion were *Chamaedorea*, *Fernaldia* and *Opuntia*. It was agreed that attention should also be given to these taxa in the next phase of the project if sufficient resources were available. Some concern was expressed about the bias towards food genera rather than the inclusion of other regionally important genera. It was agreed however that the selection of taxa represented a pragmatic consensus reached during the meeting and the list should not be extended further at this stage.

The level of current information on the above taxa, expertise, interested institutions, databases, research requirements, including priority areas for field study were discussed and noted. A summary will be circulated for review to ensure a sound basis for developing a funding proposal for the implementation phase of the project. The implementation phase should involve collection of distribution data for priority taxa with carefully targeted field work in areas of high species or genetic diversity, areas at risk and areas which are designated for conservation. The collection of data should be designed to support the selection and management of sites to conserve the genetic diversity of the taxa concerned.

Training needs

Discussion focused on the general botanical training needs within the region and the specific training needs that will be required for this project. **Bruce Benz** emphasised the need to share experiences on practical aspects of managing plant genetic resources within protected areas.

Differing capabilities within the region were noted. In Mexico, for example, there is already extensive botanical expertise, where in other countries there are very few botanists. **Cyril Nelson** pointed out that in Honduras there are only two taxonomic botanists and parataxonomists are needed to collect plant material. **Jose Alan** agreed that there is a need for collectors with basic training in Honduras, following the example of InBio in Costa Rica. **Patricia Aranda** emphasised the need to also train more taxonomists to work within the region. **Oscar Gomez** reported that there is very little expertise in the particular taxa of interest to this project within Nicaragua. There are experts in tree species but not in traditionally cultivated plants.

Efrain Guerra said that the challenge is the need to act quickly. Workshops should be organised on species of particular interest such as wild relatives within protected areas. He also emphasised the need to generate appropriate methodologies.

It was agreed that training would be required in database applications, including GIS, to meet the objectives of the project.

Luis Gonzalez emphasised that the training needs will be defined by the objectives of the project. When the objectives are clarified following analysis of the new material provided at the meeting then a detailed programme can be planned with a timetable and training needs built in.

Jane Villa-Lobos provided details of a taxonomic training programme at the Smithsonian.

Development of the field implementation project proposal

The development of a major funding proposal for implementation of a regional programme of field work and documentation was discussed. It was agreed that WCMC would be responsible for drafting the proposal and seeking funding in collaboration with organisations represented at the meeting and other relevant organisations.

It was agreed that the first step in the project would be to assemble data from herbaria and data banks on the geographic distribution of natural populations of the priority crop species and their closest relatives. The next step would be targeted field work to collect additional distribution data and carry out risk assessment. It was agreed that appropriate national organisations should take responsibility for different taxa, with technical assistance provided as necessary. **Daniel Debouck** suggested that in order to coordinate and share data collection a database package developed by WCMC should be in place in each partner organisation. He also suggested that a four year time period would be necessary to carry out the work.

Summing up

Harriet Gillett explained that WCMC had to apply to the Darwin Initiative for a further instalment of funding in November 1994. This would cover WCMC involvement in Phase III of the project. The next priorities for WCMC would be to continue data management activities for certain taxa already initiated prior to the Workshop, respond to specific requests for information which had arisen during the meeting and to develop the broader funding proposal.

Sara Oldfield thanked all participants for their valuable input to the successful meeting. She thanked CATIE for providing excellent facilities and in particular Dr Alvarez, Juan Carlos Ramirez, Ariane and the interpreters for all their help during the meeting.



Conservation and sustainable utilisation of the plant genetic resources of Mexico and Central America

Workshop
CATIE, Turrialba, Costa Rica 17-20 October 1994

Agenda

Monday 17 October

Welcome and introduction to the meeting

- * Representative from CATIE
- * Representative from REMERFI
- * Representative from WCMC - brief introduction to the project and presentation of background documents

LUNCH

- * Information requirements for *in situ* conservation planning
- * existing information on plant genetic resources *in situ*
- distribution data for taxa identified as priorities at REMERFI preparatory meeting
- * expertise on priority taxa
- * assessment of the extent to which these species are held in *ex situ* collections

Tuesday 18 October

WORKING GROUP 1

- * analysis of existing protected area coverage, the extent to which botanical inventories exist for protected areas, information on the diversity of genetic resources conserved *in situ*, techniques for selection of new protected areas, *in situ* conservation outside the protected area network

WORKING GROUP 2

- * review of database applications and draft transfer formats for data exchange on *in situ* conservation of plant genetic resources.

LUNCH

- * use of GIS in ecogeographical survey

WORKING GROUPS RECONVENE

Wednesday 19 October

- * training needs
- * reports from working groups
- * discussion and drafting of field implementation project proposal

LUNCH

- * discussion continued
- * summing up and conclusions

Thursday 20 October

- * Meeting to discuss REMERFI establishment (REMERFI representatives only)

Conservation and sustainable utilisation of the plant genetic resources of Mexico and Central America

**Workshop held at CATIE, Turrialba, Costa Rica
from 17-20 October 1994**

Funded by SIDA

Participants

COLOMBIA

Dr Daniel Debouck
CIAT
Apdo. aéreo 6713
Cali
Colombia
Fax No: 57 23 647243
Tel No: 57 23 675050

Gerardo Budowski
University for Peace
Apdo. 138, 6100 Ciudad Colon
Costa Rica
Tel No: 506 249 15 11/12/13
Fax No: 506 249 19 29

Dr Mikkel Grum
CIAT/IPGRI
Apdo. aéreo 6713
Cali
Colombia
Fax No: 57 23 647243
Tel No: 57 23 675050

Jorge Leon
Instituto Nacional de Biodiversidad
InBio
Apartado Postal 22-3100
Santa Domingo
Heredia
Costa Rica

COSTA RICA

Mariquis Alvarez
CATIE
Turrialba
Costa Rica
Fax No: 506 556 1533
Tel No: 506 556 6431

Luis G Gonzalez
Costa Rica
Fax No: 506 297 0449; 236 6713

Rafael Ocampo
CATIE
Turrialba
Costa Rica
Fax No: 506 556 0232
Tel No: 506 556 6431

EL SALVADOR

Sr. Salvador Solano
Centro Nacional de Tecnologia (CENTA)
Apartado 885
San Andres
La Libertad
El Salvador
Fax No:
Tel No: 503 384279

GUATEMALA

Ing Francisco Lopez Zelada
 Instituto de Ciencia y Tecnologia
 Agricolas
 Km.21.5 Carretera hacia Amatitlán
 Bárcenas, Villa Neuva
 Guatemala
 Fax No: 502 93 12 002
 Tel No: 031 2008; 031 2009

Ing. Agr. Efrain Medina Guerra
 Universidad de San Carlos de Guatemala
 Ciudad Universitaria, Zona 12
 Guatemala City
 Guatemala
 Fax No: 502 2 76 97 70
 Tel No: 502 2 76 71 60

Lic. Ismael Ponciano Gómez
 CECON
 Universidad de San Carlos de Guatemala
 Av. Reforma 0-63, Zona 10
 Guatemala City
 Guatemala
 Fax No: 502 2 347 664
 Tel No: 502 2 310904; 347662; 346064

HONDURAS

Dr Juan José Alán
 Unidad de Mejoramiento Vegetal y
 Recursos Geneticos
 Escuela Panamericana de Agricultura
 El Zamorano, PO Box 93
 Tegucigalpa
 Honduras
 Fax No: 504 766 249
 Tel No: 32 2660

Dr Cirilio Nelson
 Director TEFH Herbarium
 Departamento de Biología
 Tegucigalpa
 Honduras
 Fax No: 504 38 7676; 37 9715; 31 4601
 Tel No:

MEXICO

Dra. Patricia Dávila Aranda
 Jefe, Departamento de Botanica
 Instituto de Biologia UNAM
 Apartado postal 70-367
 04510 Mexico
 DF Mexico
 Fax No: 525 550 1760
 Tel No: 525 622 5693

Sr. Oswaldo Tellez
 Departamento de Botanica
 Instituto de Biologia UNAM
 Apartado postal 70-367
 04510 Mexico
 DF Mexico
 Fax No: 525 550 1760
 Tel No: 525 622 5693

Dra. Mahinda Marínez y Diaz
 Instituto de Ecologia y Alimantos
 Universidad Autonoma de Tamaulipas
 Ciudad Victoria
 Tamaulipas
 Mexico
 Fax No: 52 131 642 89
 Tel No: 52 131 627 21

Salvador Hernandez-Montes
 Instituto Nacional de Investigaciones
 Forestales y Agropecuarias
 Km. 6 Carr. Celaya-San Miguel de
 Allende
 Apdo. Postal 112
 Celaya, Gto. 38000
 Mexico
 Fax No: 52 461 15431
 Tel No: 52 461 15323; 15371

Bruce Benz
Instituto Manantlan de Ecología y
conservación de la Biodiversidad
Universidad de Guadalajara
Guadalajara
Mexico
Fax No: 52 338 72749
Tel No: 52 338 72718; 72105

NICARAGUA

Ing. Oscar Gómez Gutiérrez
Recursos Genéticos Nicaraguenses
(REGEN)
Universidad Nacional Agraria
Apartado 453
Managua
Nicaragua
Fax No: 505 2 31950
Tel No: 505 2 31439; 31619

PANAMA

Lic. Carlos Ramirez
Direccion Nacional de Desarrollo Forestal
Instituto Nacional de Recursos Naturales
Renovables
PO Box 2016 - Paraiso
Corregimiento de Ancon, Panamá
República de Panamá
Fax No: 507 32 6612; 25 7314

Sr. Martín Mitre
Division de Ciencias, ANCON
Apartado 1387, Panamá 1
Panama
Fax No: 507 64 2445
Tel No: 507 64 8100

UK

Ms Harriet Gillett
World Conservation Monitoring Centre
219 Huntingdon Road
Cambridge CB3 0DL
United Kingdom
Fax No: 44 1223 277136
Tel No: 44 1223 277314

Ms Sara Oldfield
World Conservation Monitoring Centre
219 Huntingdon Road
Cambridge CB3 0DL
United Kingdom
Fax No: 44 1223 277136
Tel No: 44 1223 277314

Dr Kerry S Walter
Royal Botanic Garden - Edinburgh
Inverleith Row
Edinburgh, EH3 1AR
United Kingdom
Fax No: 44 31 552 7171
Tel No: 44 31 552 0382

USA

Ms Jane Villa-Lobos
Latin American Plants Program
National Museum of Natural History
Smithsonian Institution
Washington DC 20560
USA
Fax No: 1 202 786 2563
Tel No: 1 202 357 2027

Dr J T Williams
Consultant
1 Scott Circle
NW #102
Washington DC 20036
USA



WORLD CONSERVATION
MONITORING CENTRE



Conservation and sustainable utilisation of the plant genetic resources of Mexico and Central America

WORKSHOP SUMMARY

As a key stage in a project on the conservation and sustainable utilisation of the plant genetic resources of Mexico and Central America, a workshop was held at CATIE, Turrialba, Costa Rica from 17-20 October 1994. The project is managed by the World Conservation Monitoring Centre in Cambridge and is funded by the Darwin Initiative. Workshop costs were met with a grant from the Swedish International Development Association (SIDA).

WORKSHOP OBJECTIVES

Prime objectives were: to discuss information requirements for *in situ* conservation planning; to review existing information on plant genetic resources *in situ* and to review mechanisms for data exchange. Working documents and maps were prepared, and database demonstrations were given, as a basis for discussion.

Delegates comprised representatives from the botanical and crop genetic resource communities of the region, protected area experts and representatives from national and international organisations including CATIE, CIAT, INBio, IPGRI, REMERFI, Royal Botanic Garden Edinburgh and the Smithsonian Institution.

PHASE 3 OBJECTIVES

Key objectives for the next phase of the project were identified as in-country capacity building to access, manage and exchange information on plant genetic resources and to prepare a final report on the efficacy of this for presentation at the FAO Fourth Technical Conference

WORKSHOP DISCUSSION AREAS

Information Needs

To provide a comprehensive planning tool for conservation, it was agreed that three different fields of information should be combined into cross-disciplinary computerised systems: floristic data; information related to habitat conservation (e.g. threats and protection status) and information from *ex situ* collections.

Key Taxa

The workshop agreed a shortlist of five genera (*Persea*; *Dioscorea*; *Cucurbita*; *Sechium*; *Manihot*) as the main focus for data collection for phase 3. A second shortlist comprising nine genera (or families) was also established (*Agave*, *Anona*, *Capsicum*, *Hylocereus*, *Juglans*, *Pachyrhizus*, *Physalis*, *Xanthosoma*, Sapotaceae). Criteria for this list were: economic importance; suitability for *in situ* conservation; centre of origin within the region; availability of taxonomic expertise.

Floristic Data

Good distribution information was seen as a priority for conservation planning, and the availability of such information was considered. It was accepted that the sources used in preparation of the workshop working documents and maps, of mapping locations from *Floras*, herbaria specimens and protected areas inventories, was the most pragmatic approach. Emphasis was given to the need to collect more raw data. Protected areas need thorough inventories, and regional surveys need to be implemented for the key taxa. As the existence of appropriate taxonomic expertise is a critical factor in accurate distribution data collection, provision of taxonomic training was accepted essential.

Habitat Conservation

The workshop agreed that existing protected areas form a logical basis for working on *in situ* conservation of plant genetic resources because they are part of existing legal and social systems. It was also agreed that in planning conservation strategies of genetic resources it is essential to take into account social and economic factors. Case studies should be made of the role played by key protected areas, focusing on examples of good practice. Involvement of local people both in understanding the importance of the plants concerned, and in understanding the conservation requirements posed by these needs was considered critical.

Ex Situ collections

It was accepted that a continuum exists between *in situ* and *ex situ* conservation, and although the project should focus on collection of data relating to *in situ* conservation, data should be managed to provide a complete perspective. With support from both IPGRI and CIAT, and information from living collections, comprehensive information coverage of both *in situ* and *ex situ* conservation becomes an achievable objective.

Data management

The workshop endorsed the need within the region for good computerized information management facilities. It was emphasised that the need for such systems was widely recognised and demand was widespread. However, past experience of data management systems was not good. Either facilities, and hence experience, was lacking, or, where computerised systems were available, experience with their use, was, in general, unsatisfactory.

The clear requirement now is for capacity building to establish effective data management systems, both hardware and software, well tested elsewhere. Comprehensive training systems to ensure such systems are used to capacity was seen as fundamental. The importance for training to be seen as an on-going process was stressed.

Information exchange

Emphasis was given to the need for ensuring ease of data exchange, and adherence to data standards. The existing International Transfer Format (ITF) developed for botanic garden plant records was considered to form a suitable basis for developing a transfer format appropriate to data management needs discussed at the workshop. It was proposed that discussions should be continued with the ITF committee to develop an enhanced system.

WCMCs role

Given adequate national data management facilities within the region, WCMC was recognised as having a key coordinating role to play in providing a regional and global overview. Distribution data on key taxa should be synthesized by WCMC, and repatriated as spatial datasets and as structured databases.

A full account of the workshop is given in the Workshop Report.

Contacts

This document includes contact details for selected individuals listed on the Plants Database *BG-BASE* at the World Conservation Monitoring Centre. The contact details were built up largely from response to a questionnaire circulated both by post and via the Internet, requesting information on experts on the list of REMERFI priority taxa (given below)

Criteria for listing:

- 1 Expertise in a genus or family considered by REMERFI as a priority for conservation (see below).
- 2 Expertise in some other sphere of interest, notably databases
- 3 Delegate to the workshop on Conservation and Sustainable Utilisation of Plant Genetic Resources of Mexico and Central America, held at CATIE in October 1994
- 4 Response to questionnaire

Please let us know of any corrections or additions.

The list is available either as hard copy or in electronic format.

For further information please contact:

Harriet Gillett, Senior Research Officer - Plants
World Conservation Monitoring Centre, 219 Huntingdon Rd,
Cambridge CB3 0DL, United Kingdom
Tel: +44 1223 277314 Fax: +44 1223 277136
email harriet.gillett@wcmc.org.uk

REMERFI priority species

Note: some additional widely cultivated non-indigenous crops are included in the REMERFI list.

Fruits

<i>Annona muricata</i>	soursop
<i>Ananas comosus</i>	pineapple
<i>Carica papaya</i>	papaya
<i>Hylocereus ocamponis</i>	pitaya
<i>Passiflora edulis</i>	passion fruit
<i>Persea americana</i>	avacado
Sapotaceae	star apple, sapodilla, sapote
<i>Psidium guajava</i>	guava
<i>Spondias purpurea</i>	Jamaica plum

Spices and stimulants

<i>Bixa orellana</i>	annatto
<i>Eryngium foetidum</i>	culantro
<i>Fernaldia pandurata</i>	loroco
<i>Pimenta dioica</i>	pimento, allspice
<i>Theobroma cacao</i>	cocoa
<i>Vanilla planifolia</i>	vanilla

Vegetables

<i>Arracacia xanthorrhiza</i>	Peruvian carrot
<i>Capsicum</i> spp.	capsicum peppers
<i>Chamaedorea tepejilote</i>	pacaya
<i>Chenopodium berlandieri</i>	huanzontle
<i>Cnidoscolus chayamansa</i>	chaya
<i>Crotalaria</i> spp.	chipilin
Cucurbitaceae	cucurbits
<i>Lycopersicon esculentum</i>	tomato
<i>Opuntia</i> spp.	nopal
<i>Physalis philadelphica</i>	Mexican husk tomato
<i>Sechium edule</i>	chayote
<i>Solanum americanum</i>	yerba mora
<i>Solanum</i> spp.	

Roots and tubers

<i>Dioscorea</i> spp.	yam
<i>Ipomoea batatas</i>	sweet potato
<i>Manihot</i> spp.	
<i>Xanthosoma sagittifolium</i>	tiquisque
<i>Xanthosoma</i> spp.	malanga
<i>Pachyrhizus erosus</i>	Mexican yam bean

Miscellaneous

<i>Bactris gasipaes</i>	peach palm
<i>Agave</i> spp.	agaves
<i>Amaranthus</i> spp.	amaranth

799 Dr. Charles D. Adams,
Honorary Associate
The Natural History Museum
Cromwell Road
London SW7 5BD
UK

Phone: 071 938 8813
Fax: 071 9389260

DIPLAZIUM ASPLENIUM
RUBIACEAE URTICACEAE
CYPERACEAE

6115 Sr. Sixto Aguilar
Universidad Nacional Autonoma de
Honduras
Apartado de Postal 30231
Comoyaguela
Honduras

5938 Sr. Remedios Aguilar Santelises
Instituto Politécnico Nacional, CIIDIR
Apartado Postal 24-B
Edo. Oaxaca 68080, Mexico

Phone: (52) 951/6-66-10

SOLANACEAE

6078 Dr Janis B Alcorn, Program Manager
Biodiversity Support Program
(Asia & Pacific)
World Wide Fund for Nature
3508 Woodbine St
Chevy Chase, MD 20815, USA

Phone: 301-654-5249
Fax: 202-861-8324
email: alcorn+r%wwfus@mcimail.com

6033 Dr. L. Allorge, Herbiere
Laboratoire de Phanerogamie
Museum National d'Histoire Naturelle
16 Rue Buffon, F-75005, Paris
France

Phone: (33) 1/40 79 33 53
Fax: (33) 1/40 79 34 84

APOCYNACEAE

6170 Sr Manuel Alonso-Martinez, Executive
Director
Fundacion Tuva
Apartado 54
Puerto Jimenez, Golfito
Costa Rica

Phone: (506) 735-5013, 5094
Fax: (506) 735-5013
email: tuva@huracan.cr

BACTRIS
ethnobotany
forestry
medicinal plants

6035 Mr. Gregory Anderson
George Safford Torrey Herbarium
Ecology and Evolutionary Biology
U-43
314 Torrey Life Science Bldg.
University of Connecticut
75 North Eagleville Rd.
Storrs, CT 06269-3043
USA

Phone: 203-486-4555
Fax: 203-486-6364

SOLANACEAE

5924 Dr. José Aquileo Lomelí S.
Herbario, Departamento de Botánica
Universidad Autónoma de Guadalajara
Escuela de Biología
Apartado Postal 1-440,
Guadalajara
Jalisco 44100
Mexico

Phone: (52) 36 415051 X 2548

APOCYNACEAE
CACTACEAE
CARICACEAE

5972 Sr Salvador Arias Montes
Jardín Botánico
Instituto de Biología
UNAM. Apdo. Postal 70-614
04510 México, D.F.
Mexico

CACTACEAE

5835 Dr Héctor T. Arita
Centro de Ecología
Universidad
Nacional Autónoma de México
México, D.F.
Mexico

AGAVACEAE

5966 Dr. H. J. Arreola Nava
Instituto de Botánica
Herbario, Universidad de Guadalajara
Apartado Postal 139
45110 apopan
Jalisco
Mexico

Phone: (52) 36/21-74-08

CACTACEAE

5954 Sr Martín Rubí Arriaga,
Research Coordinator
Fundacion Salvador Sanche Colin
CICATAMEX (Centro de
Investigaciones Científicas y
Tecnologicas del Aguacate en el
Estado de Mexico)
Ignacio aragoa No.6
Coatepec Harinas, México, D.F.
51700
Mexico

Phone: 5-07-43

Fax: 5-02-79

PERSEA

6196 Sr. Carlos Astorga
crop genetic resources

940 Dr. J.T. Atwood
The Marie Selby Botanical Gardens
811 South Palm Avenue
Sarasota
FL 33577
USA

BROMELIACEAE

ORCHIDACEAE

944 Dr. Daniel F. Austin
Biological Sciences Dept.
Florida Atlantic University
Boca Raton, FL 33431
USA

Phone: (1) 305-393-3327

CONVOLVULACEAE

5859 Biól. Margarita Aviles
Instituto Nacioanl de Anthropologia E
Historia
Matamoros No. 200 Col.Acapatingo
C.P. 62440. Cuernavaca
Morelos
Mexico

Phone: (9173) 12-59-55

Fax: (9173) 12-31-08

ORCHIDACEAE

CACTACEAE

5292 Prof. Cesar Augusto Aurdia Pére
Facultad de Agronomia
Universidad de San Carlos
Apartado Postal 1545
Guatemala

Phone: 502 2-769794

Fax: 502 2-769770

PHASEOLUS

PERSEA

CAPSICUM

PHYSALIS

IPOMOEA

CUCURBITA

SOLANACEAE

CONVOLVULACEAE

POUTERIA

AMARANTHUS

CROTALARIA

SOLANUM

MANIHOT

EUPHORBIACEAE

967 Dr. Victor Manuel Badillo
Herbario Nacional de Venezuela
Caracas 2156
Venezuela

CARICACEAE

5446 Dr. Michael J. Balick, Director
Institute of Economic Botany
The New York Botanical Garden
Bronx Park
Bronx, NY 10458-5126
USA

Phone: (718) 817 8763
Fax: (718) 817 6504

PALMAE

5303 Carlo Balistreri, Attorney
P.O. Box 327
Ashippun, WI 53003-0327
USA

Phone: (414) 474-7771
Fax: (414) 474-7772

DALBERGIA CITES

5824 Mr Alfonso V Banuet
Centro de Ecología
Universidad Nacional Autónoma de
México
México, D.F., Mexico

AGAVACEAE

6047 Dr A. Barford
Herbarium Jutlandicum
Botanical Institute
University of Aarhus
Bygn. 137
Universitetsparken
Aarhus C DK-8000
Denmark

Phone: (45) 86 199422; 202711 X
2518

ANACARDIACEAE
ARECACEAE

6316 Rupert Barneby
Herbarium
New York Botanical Gardens
Bronx, New York, NY 10458-5126
USA

LEGUMINOSAE

6001 Sr Facundo Barrientos Pére
Centro de Genética
Colegio de Postgraduados
56230 Montecillo, Mexico

OPUNTIA CACTACEAE

5595 Dra. Julieta Benite
RAMOS, Centro de Ecología
UNAM. Apartado Postal 70-275
Ciudad Universitaria
O4510 México D.F.
Mexico

Fax: 616 1976

SAPOTACEAE

5922 Dr. Bruce F. Benz, Director Interino
Instituto Manantlán de Ecología y
Conservacion de la Biodiversidad
Universidad de Guadalajara
Herbario, Laboratorio Natural Las
Joyas de la Sierra de Manantlán
Apartado Postal 1-39333
44100 Guadalajara, Jalisco 44100
Mexico

Phone: (52) 338/7 28 55
Fax: (52) 338/7 27 49
email: bben@udgserv.cencar.udg.mx

1062 Prof. Rodrigo G. Bernal, Botanist
Instituto de Ciencias Naturales
Universidad Nacional
Apartado Aereo 7495
Bogota, Colombia

Phone: 0 57 1 2442387
Fax: 0 57 1 268485

PALMAE

6123 Dr Merideth Bonierbale, Geneticist
Centro Internacional de Agricultura
Tropical, Apdo. Aéreo 6713
Cali, Colombia

Phone: (57) 23 675050
Fax: (57) 23 647243
email: m.bonierbale@cgnnet.com

MANIHOT

5910 Dr. Jaime R Bonilla Barbosa, Director
Herbario de la Universidad de
Morelos
Universidad Autónoma del Estado de
Morelos
Av. Universidad 1001
Col. Chamilpa, Cuernavaca 62210
Mexico

Phone: (73) 112-288 X 187
Fax: (73) 172-455

6083 Dr Brian M. Boom,
Vice President for Botanical Science
The New York Botanical Garden
200th Street and Southern Blvd.
Bronx, NY 10458
USA

Phone: 718-817-8632
Fax: 718-220-6783
email: bboom@nybg.org

RUBIACEAE RAPATEACEAE

6171 Prof Paul W. Bosland
Agronomy & Horticulture Dept.
New Mexico State University
Las Cruces, New Mexico 88003
USA

Phone: 505-646-5171
Fax: 505-646-6041

CAPSICUM SOLANACEAE
vegetables & spices

1172 Dr. Helia Bravo-Hollis
Herbario Nacional, Instituto de
Biología
Universidad Nacional Autónoma de
México
A.P. 70-233,
Mexico, D.F. C.P. 04510
Mexico

CACTACEAE

6164 Mr David M Brenner, Curator
North Regional Plant Introduction
Station
Iowa State University
Ames, IA 50011
USA

Phone: (515) 292-6592
Fax: (515) 292-6690
email: mc7dbdb@sol.ars-grin.gov

AMARANTHUS
CHENOPODIUM
DALEA
CELOSIA
MELILOTUS
AMARANTHACEAE

6138 Dr Ricardo Bressani Castignoli
Research Associate
Instituto de Investigaciones
Universidad de San Carlos
Apartado Postal 82
Guatemala 01901
Guatemala

Phone: (502-2) 380-336
Fax: (502-2) 380-212

FABACEAE
AMARANTHUS CROTALARIA
SOLANUM SORGHUM
ORYA GLYCINE
SESAMUM

ZEA

1179 Mr. Peter K. Bretting, Research Leader
Agronomy Department
USDA/ARS, North Central Regional
Plant Introduction Station
Iowa State University
Ames, IA 50011
USA

Phone: (515) 294-3255
Fax: (515) 294-4880
email: bretting@vincent.iastate.edu

HELIANTHUS
CUCUMIS
POROPHYLLUM
MARTYNIACEAE
databases

6300 M. Brett Callaway
Plant and Soil Science
Kentucky State University
Frankfort, KY
USA

ANNONACEAE

5901 Sr Octavio Poo Campodónico
CIFAP- Región Pánuco-INIFAP
Apartado Postal C-1 Sucursal
Aeropuerto.
C.P. 89339. Tampico
Tamaulipas
Mexico

CAPSICUM

5872 Dr. Luis Carrasquilla
Universidad de Panama
Herbarium
Departamento de Botánica
Estafeta Universitaria
Panama

Phone: (507)63-6133, X 319

BROMELIACEAE

5885 Dr. José E. Carrillo, Director
Universidad de San Carlos
Facultad de Agronomía
Apartado Postal 1545
Guatemala City
Guatemala

Phone: (502) 2 760790 - 760794
X 498

CUCURBITACEAE

5844 Ms Gloria Carrion
Instituto de Ecologia
Apdo. Postal 63
Xalapa
Veracruz
Mexico

CONVOLVULACEAE

6133 Dr Luis Carvalho
Washington University
Department of Biology
Campus Box 1137
One Brookings Drive
St Louis, MO 63130-4899
USA

email: carvalho@wustlb.wustl.edu

MANIHOT

5890 Dr. Juan J. Castillo Mont, Curator
Universidad de San Carlos
Herbario, Facultad de Agronomía
ona 12, Apartado Postal 1545
Guatemala City, Guatemala

Phone: (502) 2/760790 TO 760794
X 498

CUCURBITACEAE

6140 Dr Raul O. Castillo Torres, Lider (e.o.)
 Departamento Recursos Fitogeneticos
 y Biotecnologia
 Instituto Nacional de Investigaciones
 Agropecuarias (INIAP)
 Casill 340
 Quito, Ecuador

Phone: 593-2 690-691
 Fax: 593-2-504-240
 email: roc@macc.wisc.edu

ARACHIS
 AMARANTHUS
 CHENOPODIUM
 LUPINUS

6212 Sra. Margarita Ceppi
 Academie Internationale de
 L'Environment
 4, Chemin de Conches
 1231 Conches
 Geneva, Switzerland

Phone: +41 22-789 1311
 Fax: +41 22-789-2538
 email: dupont@sc2a.unige.ch

1337 Ing. Miquel Chazaro Basenez
 Universidad de Guadalajara
 Departamento Fileanica, Herbarium
 Apartado Postal 139
 apopan, Jalisco, Mexico

AGAVACEAE

5934 Sr. Fernando Chiang Cabrera
 Instituto de Biología
 Herbario Nacional
 Departamento de Botánica
 Universidad Nacional Autónoma de
 México, Apartado Postal 70-367
 04510 México City, Mexico

Phone: (52) 5/550-52-15 X 4880
 Fax: (52) 5/548-82-07

LYCIUM
 RUTACEAE
 SOLANACEAE

SOLANUM

6117 Dr Charles R. Clement
 Associate Researcher
 Perennial Crops Section, Department of
 Agronomic Science
 Instituto Nacional de Pesquisas de
 Amaonia - INPA
 Caixa Postal 478
 Manaus, AM 69011-000
 Brazil

email: charlesc@uhunix.uhcc.ha

THEOBROMA
 MYRCIARIA
 PSIDIUM
 COUEPIA

EUGENIA
 QUARARIBEA
 SOLANUM

5827 Mr Joe Clements
 Huntington Botanical Garden
 San Marino, CA
 USA

AGAVACEAE

5925 Ms Patricia Colunga-Garcíaamarn
 Director
 Departamento de Recursos Naturales
 Centro de Investigación Científica de
 Yucatán, A.C.
 Herbario,
 Apartado Postal 87
 Cordemex
 Mérida, Yucatán 97310
 Mexico

Phone: (99) 44-0291; 44-0271
 Fax: (99) 44-0907

OPUNTIA

5965 Sr Salvador Sánche Colín
 CICTAMEX
 Palacio Municipal.
 C.P. 51700. Coatepec Harinas
 Estado de México
 Mexico

PERSEA

1411 Dr. Lincoln Constance
Department of Botany
University of California
Berkeley, CA 94720
USA

UMBELLIFERAE

6107 Ms. Sandra Constantino
Calle 51 #4-36
Apto. 301
Bogotá, Colombia

CYATHEACEAE
DICKSONIACEAE

6049 Dr Antonio Costa Allem
Herbário, EMBRAPA/CENARGEN
P.O. Box 02372
Brasília, D.F. 70849-970
Brasil

phone: (55) 61/ 273-0100 X 145
Fax: (55) 61/ 274-3212

MANIHOT EUPHORBIACEAE

6018 Dr. Carmen L. Cristóbal, Curator
Herbario,
Instituto de Botánica del Nordeste
Casilla de Correo 209 3400 Corrientes
Argentina

Phone: (54) 783/27309

STERCULIACEAE

6326 Jose Cuatrecasas
Botany Department
United States National Herbarium
Nhb-166, Smithsonian Institution
Washington DC DC20560, USA

STERCULIACEAE

1480 Dr. William G. D'Arcy, Senior Curator
Missouri Botanical Garden
St Louis, MO 63166-0299, USA
Phone: (314) 577-5169
Fax: (314) 577-9596
SOLANACEAE

6048 Dr Luciano De Bem Bianchetti, Director
Herbário
CENARGEN/EMBRAPA
Caixa Postal 10-2372
70770 Brasília, D.F.
Brazil

Phone: (55) 61/273-0100
Fax: (55) 61/ 274-3212

ANANAS ANACARDIUM
CAPSICUM ANNONACEAE
SOLANACEAE

1545 Dr. Jan De Koning
Botanic Garden
Leiden University
P.O.Box 9516, Leiden 2300 RA
Netherlands

Phone: 31 71-275144
Fax: 31 71-273511
email: koning@rulrhh.leidenuniv.nl

ASCLEPIADACEAE
CYCADACEAE
database

3728 Dra Leia A. De Scheinvar
Jardin Botanico de la UNAM
A.P. 70-614
Delegacion Coyoacan
Mexico, D.F. C.P. 04510
Mexico

Phone: 6 22 90 50
Fax: 6 22 90 46

CACTACEAE

6050 Dra Norma B Deginani
Herbario
Instituto de Botánica Darwinion
Casilla de Correo 22
1642 San Isidro, Buenos Aires
Argentina

Phone: (54) 1/ 743-4800

PASSIFLORA PASSIFLORACEAE

6063 Mr Richard Delamater, Curator
Herbarium, Research Department
Desert Botanical Garden
1201 North Galvin Parkway
Phoenix, AZ 85008
USA

Phone: 602/ 941-1225

AGAVACEAE

1564 Dr. Alfonso Delgado Salinas
Head of Department
Herbario Nacional, Instituto de
Biología
UNAM, Apartado Postal 70-367
Mexico, D.F. C.P. 04510
Mexico

Phone: (52) 5-622-5715

Fax: (52) 5-616-2326

email: adelgado@redvax1.
dgsca.unam.mx

FABACEAE LEGUMINOSAE

6136 Dr Chris Dick
Harvard Herbaria
22 Divinity Ave
Cambridge, MA 02138
USA

Fax: 617-495-9484

email: c_dick@nocmsmgw.
harvard.edu

1626 Prof. Margaret Ann Dix, Head
Department of Biology
Universidad del Valle de Guatemala
Apartado Postal 82
Guatemala City 1901
Guatemala

Phone: 502 2 692563

Fax: 502 2 380212

email: mdix@uvg.edu.gt

ORCHIDACEAE BROMELIACEAE
CYATHEACEAE

6118 Dr C. Donadio
UNESP - Jaboticabal S.P.
Brazil

PASSIFLORA

1645 Dr. Larry R. Dorr
Dept. of Botany
Smithsonian Institution NHB 166
Washington, DC 20560
USA
Phone: (202) 633-9106

STERCULIACEAE

5782 Dr Patricia Dávila Aranda, Head
The Herbarium
Universidad Nacional Autónoma de
Mexico
Instituto de Biología, Apto Postal
70-233
Delegación Coyoacán
México DF C.P.04510, Mexico

Phone: +52 5 622 56 92 (OR 93)

Fax: +91 5 550 17 60

POACEAE

5923 Dr. Carlos L. Día Luna, Director
Universidad Autónoma de Guadalajara
Herbario, Departamento de Botánica
Escuela de Biología, Apartado Postal
1-440,
44100 Guadalajara, Jalisco, Mexico

Phone: (52) 36415051, X 2548

ANACARDIACEAE
APOCYNACEAE
CARICACEAE

5828 Ms Li²Ecker,
Curator of Living Collections
Desert Botanical Garden
Phoenix, AZ 85008, USA

Phone: 602-941-1225

Fax: 602-481-8124

AGAVACEAE

1719 Dr. Uno Eliasson, Head Curator
Herbarium
Gothenburg University
Botaniska Institutionen
Carl Skottsberg Gata 22
S-413 10 Gothenburg
Sweden

Phone: (46) 31/ 41 87 00
Fax: (46) 31/ 41 57 73

AMARANTHACEAE

1750 Dr. W.H. Eshbaugh
Herbarium, Department of Botany
Miami University
Oxford
Ohio 45056
Oxford, OH 45056
USA

Phone: (513) 529-4212
Fax: (513) 529-4243
email: eshbaugh@miamiu.acs.
muohio.edu

CAPSICUM SOLANACEAE
Medicinal Plants - Bahamas

6119 Dr Italo Faleri
EMBRAPA/CPATU
66000 Belém PA
Brazil

BIXA

6166 Mr Peter Felker, Project Leader
Center for Semi-Arid Forest Reserves
Texas A. & M. University
Campus Box 212
Kingsville, TX 72363
USA

Phone: (512) 595-3966 OR 3922
Fax: (512) 595-3713

OPUNTIA PROSOPIS
CACTACEAE
forestry

6087 Dra. Isolde Ferra
Silvicultura - INPA
C.P. 478
Manaus 69011
Brazil

SAPOTACEAE

6321 Christian Feuillet
Herbarium, United States National
Herbarium, Botany Department
NHB-166, Smithsonian Institution
Washington, WA DC2056
USA

PASSIFLORACEAE

1828 Dr. Enrique Forero, Head,
Institute of Systematic Botany
New York Botanical Garden
Bronx Park, Bronx, NY 10458-5126
USA

Phone: +1 212 220-8700
Fax: +1 212 220-6504

CONNARACEAE LEGUMINOSAE

5834 Dr Luis E. Fruns
Centro de Ecología
Universidad Nacional Autónoma de
México
México, D.F., Mexico

AGAVACEAE

6129 Prof. Paul Gepts
College of Agricultural and
Environmental Sciences
Department of Agronomy and Range
Science
Agricultural Experiment Station
Davis, CA 95616-8515, USA

Phone: (916) 752-7743
Fax: (916) 752-4361
email: plgepts@ucdavis.edu

PHASEOLUS LEGUMINOSAE

5510 Ms. Harriet J. Gillett
Senior Research Officer
Threatened Plant Unit
World Conservation Monitoring
Centre
219 Huntingdon Road
Cambridge CB3 0DL, UK

Phone: +44 1223 277314
Fax: +44 1223 277316
email: harriet.gillett@wcmc.org.uk

databases

5856 Ing. Juan J. Lópe Gonález
Depto. de Recursos Naturales
Renovables Universidad Autónoma
Agraria
Buenavista
Saltillo
Coahuila
Mexico

Phone: 17 30-22 X 352/355
Fax: (84) 17-30-63

AGAVACEAE CACTACEAE

6213 Sra. Martha González-Eliendo
CIIDIR-IPN, Unidad. Durango
Apdo. Post. 738
Durango, Dgo. C.P. 34000
Mexico

Phone: (181) 1-44-37
Fax: (181) 1-44-37

databases

6147 Prof Major M Goodman
Dept. of Crop Science
North Carolina State University
Box 7620
Raleigh, NC 27695-7620
USA

Phone: 919-515-2704
Fax: 919-515-7959

database

5946 Prof. Ma. de los Angeles
Guadarrama O., Curator
Universidad Juárez Autónoma de
Tabasco
DACB
A.P. 298
Villahermosa, Tabasco C.P. 86000
Mexico

Phone: (91-93) 54 43 08
Fax: (91-93) 54 43 08

COMMELINACEAE ARECACEAE

5914 Dr. Luis Gumán-Hernández², Curator
Universidad de Guadalajara
Herbario, Laboratorio Natural Las
Joyas de la Sierra de Manantlán,
Apartado Postal 1-39333
44100 Guadalajara, Jalisco, Mexico

Phone: (52) 338/7 27 48
Fax: (52) 338/7 27 49

CACTACEAE

1598 Prof. Luis Diego Gómez, Director
Las Cruces Tropical Botanical Garden
P.O. Box 73
San Vito 8257, Coto Brus
Costa Rica

Phone: (506) 773-3278
Fax: (506) 773-3278

ORCHIDACEAE RAFFLESACEAE
BALANOPACEAE
CUCURBITACEAE
databases

2625 Prof. Jorge Gómez-Laurito, Director
Herbario, Escuela de Biología
Universidad de Costa Rica
Ciudad Universitaria 2060
San José
Costa Rica

Phone: 253-53-23 X 5432
email: jgomel@cariari.ucr.ac.cr

CYPERACEAE

2046 Dr. W. Hahn

Smithsonian Institution
Dept of Botany NHB 166
Washington DC 20560
USA

BIXACEAE

6305 Fritz Hamer

Herbarium, Marie Selby Botanical
Gardens
811 South Palm Ave,
Sarasota, FL 34236
USA

BROMELIACEAE

6302 Bertel Hansen

Herbarium, Botanical Museum
University of Copenhagen
Gothersgade 130
Copenhagen K DK-1123
Denmark

APOCYNACEAE

6146 Mr Hugh C. Harries, Registrar

International Coconut Cultivar
Registration Authority
17 Alexandra Road
Lodmoor Hill, Weymouth DT4 7QQ

Phone: 0305 774773

Fax: 0305 784474

2098 Prof. Jack G. Hawkes

Department of Continuing Education
The University of Birmingham
P.O. Box 363
Birmingham, B15 2TT
UK

Phone: +44 121 414 6170

SOLANUM

6015 Prof. Charles B. Heiser

Professor Emeritus
Herbarium, Biology Dept.
Indiana University
Bloomington, IN 47405
USA

Phone: (812) 855-5822

Fax: (812) 855 6705

SOLANUM

LAGENARIA

HELIANTHUS

SOLANACEAE

6086 Dr Andrew Henderson

New York Botanical Garden
Bronx, NY 10458
USA

Phone: 718-817-8973

Fax: 718-220-1029

email: ahenderson@nybg.org

BACTRIS

PALMAE

5640 Dr Hector M Hernandez

Research Botanist
Ciudad Universitaria, UNAM
Instituto de Biología
Apartado 70-367
Mexico D.F. 04510
Mexico

Phone: 0 52 5 5488207

Fax: 52 5 4488207

CACTACEAE

5945 Ms. Elia Hernández Valencia

Universidad Autónoma de San Luis
Potosí
Herbario, Instituto de Investigación de
zonas Desérticas
Apartado Postal 458
78000 San Luis Potosí
Mexico

Phone: (52) 48123461 X 151

CACTACEAE

5943 Dr. R. E. Hernández Valencia²
 Universidad Autónoma Agraria
 Antonio Narro
 Herbario, Departamento de Botánica
 Buenavista
 25315 Saltillo
 Coahuila
 Mexico

Phone: (52) 84143100 X 314

CACTACEAE

6137 Ms. Madalene L. Hill, Owner
 Flavour Connection
 P.O. Box 226
 Round Top, TX 78954-0226
 USA

Phone: 409-249-5542

Fax: 409 249-5283

5826 Ms Wendy C. Hodgson, Curator
 Herbarium, Research Department
 Desert Botanical Garden
 1201 North Galvin Parkway
 Phoenix, AZ 85008
 USA

Phone: 602/ 941-1225

Fax: 602-481-8124

AMOREUXIA AGAVACEAE
 COCHLOSPERMACEAE

2166 Ms. Adriana E. Hoffmann J.
 Fundacion Claudio Gay
 Alvaro Casanova 613
 Nunoa-Penalolen
 Santiago, Chile

Phone: 562 2772899

Fax: 562 2775954

h phone: 562 2772899

CACTACEAE

2204 Dr. Colin Hughes, Research
 Department of Plant Sciences
 Oxford Forestry Institute
 South Parks Road
 Oxford OX1 3RB, UK

Phone: 0865 275128

Fax: 0865 275074

LEUCAENA GLIRICIDIA
 LEGUMINOSAE
 databases

2212 Dr. David R. Hunt
 83 Church St
 Milborne Port
 Sherbourne DT9 5DJ
 UK

H phone: 0963 250899

H Fax: 0963 250999

email: d.hunt@rbgkew.org.uk

CACTACEAE

2215 Prof. Armando T. Huniker, Director
 Herbario, Museo Botánico
 Facultad de Ciencias Exactas
 Físicas y Naturales
 Universidad Nacional de Córdoba
 Casilla de Correo 495
 5000 Córdoba
 Argentina

Phone: (54) 51/ 222284

Fax: (54) 51/ 37841

AMARANTHUS SOLANACEAE
 AMARYLLIDACEAE
 CACTACEAE
 AMARANTHACEAE

2245 Dr. Gordon Brent Ingram, Consultant
 1230 Hamilton St. #204
 Vancouver, BC V6B 2S8, Canada

Phone: 604-669-0422

Fax: 604-669-2765

CAPSICUM
 tropical rainforest

6069 Drs Gerald A. Islebe

Hugo De Vries Laboratory
University of Amsterdam
Kruislaan 318
Amsterdam 1098 SM
Netherlands

Phone: 525 7193

Fax: 525 7662

2337 Ing. Enrique J. Jardel, Director

Instituto Manantlán de Ecología y
Conservación de la Biodiversidad,
Universidad de Guadalajara
V. Velasco 253
48740, Mexico

Phone: (338) 72748, 72105

Fax: (338) 72749

6219 Sr Melvin Anel Jaén

Investigador Agrícola
Instituto de Investigación Agropecuaria
de Panamá
Sub Centro de Río Hato
Río Hato, Provincia de Coclé
Panama

Phone: 93-3253

Fax: 93-3253 OR 64-9270

CARICA

CITRUS

2344 Mr. Charles Jeffrey

Herbarium
Royal Botanic Gardens Kew
Richmond TW9 3AB
UK

Phone: +44 0181 332 5269

Fax: +44 0181 948 5197

CUCURBITA CUCURBITACEAE

2366 Sr. Quirico Jimenez

Centro de Datos para la Conservación
de Costa Rica
Instituto de Biodiversidad Nacional
Apartado Postal 22-3100 Santo
Domingo, Heredia
Costa Rica

Phone: 506 36-42-69

Fax: 506 36-28-16

5931 Dr. Jaime Jiménez R.

Universidad Nacional Autónoma de
México
Herbario, Departamento de Biología
Facultad de Ciencias
Apartado Postal 70-399
04510 Mexico City, D.F.
Mexico

Phone: (52) 5/550-52-15 X 3944

EUPHORBIACEAE

5973 Dr. N. Jiménez Reyes

Instituto de Botánica
Herbario, Universidad de Guadalajara
Apartado Postal 139
45110 apopan,
Jalisco
Mexico

Phone: (52) 36/21-74-08

SOLANACEAE

6309 Duane L Johnson

Department of Agronomy
Colorado State University
Fort Collins, CO 80526
USA

CHENOPODIACEAE

1572 Dr. Dennis Johnson
605 Ray Drive
Silver Spring, MD 20910
USA

Phone: 301 422-4722
Fax: 202 722 0890

PALMAE

2398 Dr. M.C. Johnston
Plant Resources Centre
Department of Botany,
University of Texas,
Austin, TX 78713-7640
USA

EUPHORBIACEAE
RHAMNACEAE

5906 Sr Eliseo Redondo Juárez
CIFAP-Guanajuato-INIFAP
Apartado Postal 112
C.P. 38000 Celaya
Mexico

CAPSICUM

6068 Drs Maarten Kappelle
Associate Researcher
Hugo De Vries Laboratory
University of Amsterdam
Kruislaan 318
Amsterdam 1098 SM
Netherlands

Phone: 31-20-5257840
Fax: 31-20-5257662

2479 Dr. Shirley H. Keel, Chief Botanist
Latin America Science Program
The Nature Conservancy
1815 North Lynn Street
Arlington, VA 22209
USA

Phone: 703-841-2714
Fax: 703-841-2722

databases

2512 Dr. Roberto Kiesling, Researcher
Inst. de Botanica Darwinion
Casilla Correo 22
Labarden 200
1642 San Isidro PROV. BUENOS
AIRES
Argentina

Phone: 0 54/1/7474748
Fax: 54/1/7474748

CACTACEAE

2518 Mr. Myron Kinnach
Huntington Botanical Garden
San Marino, CA 91108
USA

HYLOCEREUS CACTACEAE

6214 Dr Sandy Knapp
Herbarium
British Museum (Natural History)
Cromwell Road
London SW7 5BD
UK

Phone: +44 071 938-9191

SOLANUM

6106 Sr. Antonio Krapovickas, Director
Instituto de Botánico del Nordeste
Sargento Cabral 2131
Casilla de Correo 209
Corrientes 3400
Argentina

Phone: 0783 27309

ARACHIS

6218 Dr Anatole F. Krattiger
Associate Director
International Academy of the
Environment
1231 Conches, Geneva, Switzerland

Phone: +41 22-789-1311
Fax: +41 22-789-2538

6306 John Kress
Herbarium, United States National
Herbarium, Botany Department
NHB-166, Smithsonian Institution
Washington, WA DC20560
USA

BROMELIACEAE

5995 Dr Angel Lagarda Murrieta,
Research Director for Agriculture
INIFAP, San Ricardo 207
Torreon, Coah. 29290
Mexico

Phone: (91 176) 2-02-02,3,4,5
Fax: (91-176) 2-07-14

CARYA

6317 Leslie Landrum
Herbarium, Botany Department
Araona State University,
Tempe, A A85287-1601
USA

MYRTACEAE

2618 Dr. Alfred B. Lau, Proprietor
Botanical Garden
Apartado 98,
Cordoba, Ver. 94500
Mexico

Phone: (271) 3-0808

PINGUICULA CACTACEAE
ORCHIDACEAE CYCADACEAE
conservation technique

6295 T. J. Lawrence
Herbarium, Royal Botanical Gardens
Kew, Richmond Surrey, TW9 3AB
UK

AGAVACEAE

6046 Dr Chr. O. Lehmann
Head of Gene Bank
Herbarium
Abteilung Taxonomie und Evolution
entralinstitut für Genetik und
Kulturpflanzenforschung
DDR- 4325 Gatersleben
Germany

Phone: (37) 45592/50

LYCOPERSICON PISUM
GLYCINE SOLANACEAE

6145 Dr Richard N. Lester, Lecturer
School of Biological Sciences
University of Birmingham
Edgbaston, Birmingham B15 2TT
UK

Phone: 021 414-5564
Fax: 021 414 5925

SOLANUM SOLANACEAE
databases

6071 Dr Ernesto Aguirre León, Director
Departamento de Biología
Experimental
Escuela Nacional de Estudios
Profesionales
Itacala
University Nacional Autónoma de
México
Los Reyes. 54090
Tlanlnepantla, Edo. México
Mexico

Phone: (52) 5/565-22-33 X 135

ORCHIDACEAE BROMELIACEAE

6020 Sr Régulo León-Arteta, Director
Facultad de Ciencias Agrícolas
Universidad Veracruzana
Mártires 28 Agosto. #210
Col.Ferrer Guardia
Xalapa, Ver. 91020, Mexico

Phone: (28) 15-51-38
Fax: (28) 17-55-00

5842 Mr Alberto Linajes
Herbario, Facultad de Agronomía
Universidad de San Carlos, Vona 12
Guatemala City 1545
Guatemala

CONVOLVULACEAE

5935 Sr. Rafael Lira Saade
Instituto de Biología
Herbario Nacional
Departamento de Botánica
Universidad Nacional Autónoma de
México
Apartado Postal 70-367
04510 México City
Mexico

Phone: (52) 5/550-52-15 X 4880
Fax: (52) 5/548-82-07

CUCURBITACEAE

6125 Sr José Lomeli Sencion, Director
Jardin Botanico Jorge Victor Eller T.
Universidad Autonoma de Guadalajara
Av. Patria 1201
Apdo. Postal 1-440
Guadalajara, Jalisco 44100
Mexico

Phone: (3) 641-7051 X 2484
Fax: (3) 642-5427

CARICA

PEDILANTHUS

CARICACEAE

CACTACEAE CRASSULACEAE

5307 Luis Lope Lope, Reseacher
Fundacion Salvador Sanche Colin
CICTAMEX, S.C.
Ignacio, aragoa No. 6
Coatepec Harianas 51700
Mexico

Phone: 5-07-43
Fax: 5-02-79

PERSEA

2718 Dr. David H. Lorence, Director
National Tropical Botanical Garden
P.O. Box 340
Lawai, Kauai, HI 96765
USA

Phone: (808) 332-7324
Fax: (808) 332-9765

RUBIACEAE

MONIMIACEAE

2723 Dr. A. Lot, Director
Universidad Nacional Autonoma de
Mexico
Herbario Nacional
Instituto de Biología
Apto Postal 70-367
Mexico D.F. 04510
Mexico

Phone: 622 57 10 OR 622 57 14
Fax: 616-23-26

HYDROCHARITACEAE

CYMODOCEACEAE

5341 Dra. Zoraida Luces de Febres, Director
Jardin Botánico de Caracas
Avenida Salvador Allende
Apartado No. 2156
Caracas 1010-A
Venezuela

PALMAE

2738 M.D. Carlyle A. Luer
Research Associate (retired)
Missouri Botanical Garden
P.O. Box 299
St. Louis, MO 63166-0299
USA

Phone: 813-953-3435

PLEUROTHALLIS

MASDEVALLIA

STELIS

LEPANTHES

DRACULA

ORCHIDACEAE

2750 Dr Harry E. Luther

Curator of Living Collections
Marie Selby Botanical Gardens
The Herbarium
811 South Palm Avenue
Sarasota, FL 34236, USA

Phone: 813 955 7553

Fax: 813 951 1474

BROMELIACEAE

2775 Dr. P.J.M. Maas

Institute for Systematic Botany
Transitorium II
Heidelberglaan 2, Utrecht
Netherlands

ANNONACEAE

6311 Dr Andrew MacDonald

Herbario, Institute de Ecología
A.C. 91000 Xalapa Veracruz
Xalapa 63, Mexico

CONVOLVULACEAE

2780 Mr. John M. MacDougal

Missouri Botanical Garden
P.O. Box 299
St. Louis, MO 63166, USA

Phone: 314-577-5100

PASSIFLORA PASSIFLORACEAE

5808 Sr Roberto B. Mack, Co-director

Banco de Germoplasma
Asociación de Nuevos Alquimistas
ANAI
Apdo 170-2070, Sabanilla Montes de
Oca
Costa Rica

Phone: (506) 224-3570

Fax: (506) 253 7524

email: rbmack@nicarao.apc.org

databases

6151 Mr Richard M. Manshardt

Associate Horticulturist
Department of Horticulture
University of Hawaii
3190 Maile Way
Honolulu, HI 96822, USA

Phone: (808) 956-6063

Fax: (808) 956-3894

CARICACEAE

5829 Ms Nora Martínez

Huntington Botanical Garden
San Marino, CA, USA

AGAVACEAE

5894 Dr. A. Martíne

Universidad de San Carlos
Herbario, Facultad de Agronomía
Avenida 12, Apartado Postal 1545
Guatemala City, Guatemala

Phone: (205)2/760790 X 498

AMARANTHACEAE

2871 Dr. Kamarudin Mat Salleh

Jabatan Biologi
Universiti Kebangsaan Malaysia
Kampus Sabah, Beg Berkunci No. 62
88996 Kota Kinabalu
Malaysia

Phone: (6-088) 4940000 X 6314

Fax: (6-088) 492742

ANNONACEAE RAFFLESACEAE

5860 Dr. Mildred Mathias

University of California
405 Hilgard Ave.
Los Angeles, CA 90024-1606, USA

UMBELLIFERAE

5552 Dr. Nigel Maxted

Lecturer & Consultant
School of Biological Sciences
Birmingham University
Edgbaston, Birmingham
Birmingham B15 2TT, UK

Phone: 021 414-5571

Fax: 021 414-5925

email: maxtedn@bham.ac.uk

LEGUMINOSAE

databases

5939 Ms. Gladys I. Maanero M.

Instituto Politécnico Nacional
CIIDIR
Apartado Postal 24-B
68080 Oaxaca
Edo. Oaxaca
Mexico

Phone: (52) 951/6-66-10

ANACARDIACEAE

APOCYNACEAE

6325 Richard McCain

Quail Mountain Farms
1410 Camagna Way
Watsonville, CA CA 95076
USA

SOLANACEAE

6296 Steven McLaughlin

Department of Medicinal Chemistry
Purdue University
West Lafayette, IN IN 47907
USA

AGAVACEAE

6312 Gordon McPherson

Herbarium, Missouri Botanical Garden
P.O. Box 299
St. Louis, MO MO 63166-0299
USA

CONVOLVULACEAE

EUPHORBIACEAE

6019 Ma Francisco Gonale Medrano

Herbario Nacional
Universidad Nacional Autónoma de
México
A.P. 70-367
México, D.F. 20
Mexico

Phone: 6-22-56-96

Fax: (91-5) 5-50-17-60

MANIHOT

2934 Dr. Willem Meijer, Director

Herbarium, School of Biological
Sciences
101 Morgan Building
University of Kentucky
Lexington, KY 40506-0225, USA

Phone: 606 257-3240; 257-4711

RAFFLESACEAE

TILIACEAE

STERCULIACEAE

6132 Sr Sergio Melgar Valladares, Estudiante

Universidad de Costa Rica
Escuela de Biología
San Pedro
Costa Rica
email: smelgar@bribri.ci.ucr.ac.cr

SOLANUM

5830 Ma Abisaf García Mendoza

Jardín Botánico
UNAM
Apdo. Postal 70-614 Del. Coyoacán
C.P. 04510 México, D.F.
Mexico

Phone: (525) 622-8976/5

Fax: (525) 616-2326

AGAVACEAE

LILIACEAE

AMARYLLIDACEAE

6304 Fatimna Meules
Herbario, Sección Botánica, Facultad
de Ciencias
Universidad Nacional de Asunción,
Casilla de Correo 1055
Asunción, Paraguay

BIXACEAE

6074 Mr John D. Mitchell, Research Associate
New York Botanical Garden
Institute of Systematic Botany
Bronx, NY 10458, USA

Phone: 718-817-8647

ANACARDIUM SPONDIASAN
ACARDIACEAE

6183 Sr. Martín Mitre
División de Ciencias
Centro de Datos para la Conservacion
del Panamá
División de Ciencias, ANCON
Apartado Postal 1387, ona 1
Panamá 1, Panama

Phone: 507 64-8100
Fax: 507 64-2445

databases

6165 Dr Francisco E Molina Frenar,
Investigador Asociado
Centro de Ecologia
Universidad Nacional Autonoma de
Mexico, Apartado Postal 1354
Hermosillo, Sonora 83000
Mexico

Phone: (62) 13-93-03
Fax: (62) 17-53-40
email: freaner@unamvm1.dgsca.unam.mx

AMARANTHUS PINUS

5831 Ms Esther S. Monarque
Centro Ecología de Sonora
Hermosillo, Sonora, Mexico

AGAVACEAE

5904 Sr Salvador Montes Hernández,
Investigador Del Programa de
Recursos Genéticos
Campo Experimental Bajio
Nacional de Investigaciones Forestales
y Agropecuarias,
Km. 6 Carr.Celaya-San Miguel de
Allende
Apdo. Postal 112, Celaya, Gto. 38000
Mexico

Phone: +52 461-15323 AND 15371
Fax: +52 461-15431

CAPSICUM PHYSALIS
CUCURBITA LYCOPERSICON
ethnobotany databases

5932 Sr. René Moreno Hernández
Universidad Nacional Autónoma de
México
Herbario, Departamento de Biología
Experimental Escuela Nacional de
Estudios Profesionales
Itacala, Los Reyes, 54090 Tlalnepantla
Edo. México, Mexico

Phone: (52) 5/5652233 X 135

CROTALARIA FABACEAE
LEGUMINOSAE

5284 Mr Maimunah Morshidi,
Research Assistant
Dept. of Horticulture
University of Hawaii
3190 Maile Way
St. John Hall Rm 102
Honolulu, HI 96822, USA

Phone: 808-956-2153
Fax: 808-956-3894
email maimunah@uhunix.uhcc.hawaii.edu

CARICA CARICACEAE

6044 Dr Sergej L. Mosyakin
Herbarium
N.G. Kholodny Institute of Botany
Academy of Sciences of the Ukraine
252601 Kiev-4
Ukraine

Phone: KIEV 225-20-38

CHENOPODIACEAE
AMARANTHACEAE

6030 Sr Juan Mulato B., Investigador Adjunto
Centro de Genética
Colegio de Postgraduados
Montecillo
Mexico

SPONDIAS

6031 Prof. Abel Muñoz O.
Centro de Genética
Colegio de Postgraduados
Montecillo, Mexico

SPONDIAS

6051 Dra María E. Múlgura
Herbario
Instituto de Botánica Darwinion
Casilla de Correo 22
1642 San Isidro, Buenos Aires
Argentina

Phone: (54) I 743-4800

TRAGIA LIPPIA
CHENOPODIACEAE

3117 Dr. Gary P. Nabhan
Native Seeds / SEARCH
Tucson, AZ
USA

AGAVACEAE

5992 Sr José Nahed Toral
Investigador Asociado "c"
Centro de Investigaciones Ecológicas
del Sureste
Carretera Panamericana y
Periferico sur s/n
Apartado Postal 63
San Cristobal de Las Casas, Chiapas
29290
Mexico

Phone: 91(967)81883/81884

Fax: 91(967)81883/84 OR 82322

food crops databases

3166 Dr. Michael Nee
Herbarium
New York Botanical Gardens
Bronx
NEW YORK, NY 10458,
USA

SOLANACEAE CUCURBITACEAE

3171 Dr. Cyril H. Nelson Sutherland, Director
Departamento de Biología (Herbario)
Universidad Nacional Autónoma de
Honduras, Tegucigalpa
Honduras

Phone: (504) 32-2110 X 170

Fax: (504) 31-4601

CYRILLACEAE
HAEMODORACEA
EMYOPORACEAE
databases

6314 Linda Newstrom
Department of Entomology,
University of California
Berkeley, CA 94720
USA

CUCURBITACEAE

6173 Prof. Timothy J. Ng
Dept. Horticulture
University of Maryland
College Park, MD 20742-5611
USA

Phone: 301/405-4345
Fax: 301/314-9308
email: tn5@umail.umd.edu

CUCURBITA

3195 Dr. D.H. Nicolson
Smithsonian Institution
Dept. of Botany
Washington D.C. 20560
USA

ARACEAE

3205 Dr. Park S. Nobel
Herbarium, Biology Department
Department of Biology and
UCLA-DOE Laboratory
University of California
Los Angeles, CA 90024-1606
USA

CACTACEAE

6313 Dr. Tim Nye
Horticulture, University of Maryland
College Park, MD
USA

CUCURBITACEAE

5305 Sr ^fRayael Ocampo
CÁTIE
Turrialba 7170
Costa Rica

Phone: (506) 556 1712, 556 6188
Fax: (506) 556 1533, 556 1421

QUASSIA

3255 Ms. Sara F. Oldfield
World Conservation Monitoring
Centre
219 Huntingdon Road
Cambridge CB3 0DL
UK

Phone: (0223) 277314
Fax: (0223) 277136
email: sara.oldfield@wcmc.org.uk

CACTACEAE

5095 Ms. Peggy Olwell
Director of Botanic Gardens Programs
Center for Plant Conservation
Missouri Botanical Garden
P.O. Box 299
St. Louis, MO 63166
USA

Phone: 314-577-9452
Fax: 314-577-9465

PEDIOCACTUS CACTACEAE

5926 Sr. Roger Orellana-Lana
Centro Investigación Científica de
Yucatán Herbario,
Departamento de Recursos Naturales
A.c., Apartado Postal 924
97000 Mérida, Yucatán, Mexico

Phone: [52] 99/ 26-40-22

AGAVACEAE

5977 Sr Felipe Palma Cru
Instituto Tecnología de Oaxaca
Mexico

AGAVACEAE

6297 T. M. Pedersen
Herbarium, Botanical Museum
University of Copenhagen
Gothersgade 130,
Copenhagen K DK-1123, Denmark

AMARANTHACEAE
UMBELLIFERAE

6322 T D Pennington
Herbarium, Royal Botanical Gardens
Kew, Richmond Surrey
Richmond TW9 3AB
UK

SAPOTACEAE

6307 D. Philcox
Herbarium, Royal Botanical Gardens
Kew, Richmond Surrey, TW9 3AB
UK

BROMELIACEAE

5364 Dr. Barbara Pickersgill
School of Plant Sciences
Department of Agricultural Botany
University of Reading
Whiteknights PO Box 221
Reading RG6 2AS
UK

Phone: 0734 318096

Fax: 0734 750630

3408 Dr. G.E. Pil, Director
Escuela Agrícola Panamericana
Apto 93, Tegucigalpa, Honduras

SAPOTACEAE

5845 Mr Eulogio Pimienta-Barrios
Herbario Nacional, Departamento de
Botánica, Instituto de Biología
Jalisco 44410, Mexico City 70-367
Mexico

CACTACEAE

5919 Dr. María del Rosario Pineda López,
Profesor Investigador Titular
Instituto Manantlán de Ecología y
Conservación de la Biodiversidad
Nicolas Bravo #66
El Grullo, Jalisco 48740, Mexico

Phone: (52) 7-27-41

Fax: (52) 7 27-49

databases

3412 Prof. Donald J. Pinkava
Herbarium
Department of Botany and
Microbiology
Arizona State University
Tempe, AZ 85287-1601
USA

Phone: (602) 965-3179/3414

Fax: (602) 965-6899

OPUNTIA ASTERACEAE
CACTACEAE

5937 Dr. Rabindranath Polanco Araúza
Universidad Autónoma de Nuevo León
Herbario, Facultad de Ciencias
Biológicas
Apartado Postal 2790
Monterrey, Nuevo León
Mexico

Phone: (52) 83/523905

EUPHORBIACEAE

5641 Dr Marisela Ponce
Venezuela

CACTACEAE

3434 Lic. Ismael Ponciano Gomez
CECON
Universidad de San Carlos de
Guatemala
Av. Reforma 0-63, zona 10
Guatemala City
Guatemala

Phone: 310904, 347662

Fax: (502-2) 347664

THEACEAE

5469 Mr. Sopon Puak-Im
103 Mu. 7, Ban Dong
T. Samsai, A. Maechan
Chieng Rai 57110
Thailand

CYCADACEAE PALMAE

6143 Ma. Teresa Pulido Salas, Coordinator
Botanical Garden F.J. Clavijero
Instituto de Ecología
Carretera antigua a Coatepec, Km. 2.5
Xalapa, Ver. 91000
Mexico

Phone: 186000; 186009 X 230
Fax: 186910; 186710

4434 Ing. Jorge A. Pére de la Rosa
Instituto de Botánica
Universidad de Guadalajara
Profesor Investigador
Apartado Postal 139
apopan, Jalisco 45110
Mexico

Phone: 6 82 00 03
Fax: 6 82 00 76

PINUS

6128 Dr José Ma Ramos P
Dept. Química y Biología
Universidad de las Americas - Puebla
Apdo. Postal 100
Cholula, Puebla 72820
Mexico

Phone: 22 29-24-10, 22 29-20-67
Fax: 22 29-20-66
email: rapm@udlapvms.pue.udlap.mx

ANNONA	PERSEA
VITEX	FICUS
PRUNUS	SPONDIAS
CITRUS	AMYGDALUS
PUNICA	PASSIFLORA
PSIDIUM	INGA
LUCUMA	PYRUS
MANGIFERA	CYDONIA
MORUS	MALPIGHIA
JUGLANS	CARYA
PINUS	CEREUS
OPUNTIA	DIOSPYROS
CASIMIROA	
CRATAEGUS	ROSACEAE
LEGUMINOSAE	MORACEAE
SAPOTACEAE	

5899 Sr Eduardo Espitia Rangel
Programa de Amaranto.
CEVAMEX-CIFAP-MEX-INIFAP
Apartado Postal 10
C.P. 56230 Chapingo
Mexico

AMARANTHACEAE

6072 Dr. Hermilo Quero Rico
Herbario Nacional, Instituto de
Biología
Universidad Nacional Autónoma de
México
A.P. 70-233,
Mexico, D.F. C.P. 04510, Mexico

ARECACEAE PALMAE

5843 Mr Victor Rico-Gray
Instituto de Ecología
Apdo. Postal 63
Xalapa
Veracruz 91000
Mexico

CONVOLVULACEAE

6025 Sr Adolfo Rodríguez Canto
Centro Regional de la Península de
Yucatán
Universidad Autónoma Chapingo
Street 25 No. 84
Maxcanu, Yucatán 97800, Mexico

Phone: 99-491-411, 997-12103
Fax: 99-451-953, 99-252-475

ALOE HYLOCEREUS
PACHYRHIZUS

5974 Dr. Aarón Rodríguez Contreras
Instituto de Botánica
Herbario, Universidad de Guadalajara
Apartado Postal 139
45110 apopan, Jalisco
Mexico

Phone: (52) 36/21-74-08

SOLANACEAE

6055 Dr Jens G. Rohwer
Institut für Systematische Botanik
Im Neuenheimer Feld 345
Univ. Heidelberg
Heidelberg 69120
Germany

Phone: +49-6221-564679

Fax: +49-6221-565508

NECTANDRA LAURACEAE
OLEACEAE

6124 Sr Eduardo Sahagún Godíne, Director
Herbario de la Escuela de Biología
Universidad Autonoma de Guadalajara
Apdo. Postal 1-440
Guadalajara, Jalisco 44100
Mexico

Phone: (3) 642 9900 X 3014

Fax: (3) 641 9513

email: esahagun@uagunix.gdl.uag.mx

ORCHIDACEAE GESNERIACEAE
BROMELIACEAE

3673 Dr Maurizio Sajeve
Dipartimento de Scienze Botaniche
Universita
Palermo I-90123
Italy

Phone: +39 91 617403

Fax: +39 91 6176089

succulents

6014 Prof. Jan Salick
Herbarium
New York Botanical Gardens
Bronx, New York, NY 10458-5126
USA

MANIHOT EUPHORBIACEAE
SOLANACEAE

5837 Dr Isidro C. Sanchez
Centro de Investigación Científica de
Yucatan
Apto. Postal 087.
Cordamex 97310
Merida, Yucatan
Mexico

Phone: 99 440291; 440353

Fax: 99 44-09-07

email: castoren@redvaxl.degesca.unam.mx

ALOE AGAVE
AGAVACEAE
medicinal plants

6064 Dr Jonathan Sauer Emeritus
Herbarium, Biology Department
University of California
Los Angeles, CA 90024-1606
USA

Phone: 213/ 825-2714

Fax: 213/ 206-3987

AMARANTHUS CANAVALIA
STENOTAPHRUM
AMARANTHACEAE

3726 Mr. G Schat
Missouri Botanical Garden
P.O. Box 299
St Louis, Missouri 63166
USA

ANNONACEAE

6174 Mr Raymond J. Schnell, Project Leader
National Clonal Germplasm
Repository,
USDA - ARS
13601 Old Cutler Rd
Miami, FL 33158, USA

Phone: 305-254-3611

Fax: 305-238-9330

email: miars@ars-grin.gov

MANGIFERA PERSEA
ANNONA PASSIFLORA
databases

5495 Mr James Shepherd
201/33 Mubaan Phasuk
Pattanakarn Rd
Pravate
Bangkok 10250
Thailand

CYCADACEAE PALMAE

6315 Bernice Shubert
Harvard University Herbaria
22 Divinity Avenue 02138
Cambridge, MA 02138
USA

DIOSCOREACEAE

5905 Dr María Elena Siqueiros, Director
Herbario, Departamento de Biología
Universidad Autónoma de
Aguascalientes
Av. Universidad s/n
C.P. 20100, Aguascalientes, Ags.
Mexico

Phone: 49 12-33-45
Fax: 91 (49) 14-55-91

6142 Dr Marten Sorensen, Project Coordinator
Botanical Section, Dept. of Botany,
Dendrology & Forest Genetics
Royal Agriculture and Veterinary
University
Rolighedsvej 23
Frederiksberg
C (Copenhagen) DK - 1958
Denmark

Phone: +45 352 82815
Fax: +45 352 82821

PACHYRHIZUS
SPHENOSTYLIS
VIGNA LEGUMINOSAE
databases

5933 Dr. Carmen Soto Estrada
Universidad Nacional Autónoma de
México
Herbario, Departamento de Biología
Experimental
Escuela Nacional de Estudios
Profesionales
Itacala
Los Reyes
54090 Tlalnepantla
Edo. México
Mexico

Phone: (52) 5/5652233 X 135

FABACEAE LEGUMINOSAE

5991 María L. Soto Pinto, Researcher
Centro de Investigaciones Ecológicas
Del Sureste (ECOSUR)
Apdo. Postal 73
San Cristobal Las Casas 29200
Mexico

Phone: (967) 8-18-83, 8-18-84
Fax: (967) 8-23-22

6114 Prof. David M. Spooner
Associate Professor
Dept. of Horticulture
University of Wisconsin
1575 Linden Dr.
Madison, WI 53706-1590
USA

Phone: 608-262-0159
Fax: 608-262-4743
email: dspooner@macc.wisc.edu

SOLANUM

5841 Dr George Staples
Botanical Museum
Harvard University
Cambridge, MA 02138
USA

CONVOLVULACEAE

5847 Dr Warren D. Stevens
Missouri Botanical Garden
P.O. Box 299
St. Louis, MO 63166-0299
USA

Phone: (314) 577-5169
Fax: (314) 577-9596

ASCLEPIADACEAE
APOCYNACEAE

3975 Mr. J. Dieter Supthut
Stadtische Sukkulentsammlung,
Mythenquai 88,
CH-8002 Zurich
Switzerland

DIDIEREACEAE
EUPHORBIACEAE
ALOEACEAE

5883 Dr Jesús Axayácatl C. Sánchez,
Director of Gene Bank
Departamento de Fitotecnia
Universidad Autónoma Chapingo
Chapingo,
Estado de México 56230
Mexico

Phone: 1595 50642
Fax: 1595 50642
email: alam@unamvm1.dgsca.unam.mx

POUTERIA SPONDIAS
Ethnobotany ZEA

3888 Sr. Maria Sousa Sánchez
Herbario,
Universidad Nacional Autonoma de
Mexico, Herbario Nacional,
Instituto de Biología
AP 70-367,, Mexico, D.F. 04510,
Mexico

FABACEAE LEGUMINOSAE

5875 Dr. Pablo E. Sánchez V., Director
Herbario Nacional,
Museo Nacional de Costa Rica
Apartado 749-1000,
San José, Costa Rica

Phone: (506) 571433 X 35/42
Fax: (506) 33 74 27

MYRTACEAE

3693 Dr. Pablo E. Sánchez Vindas
Investigador
Instituto Nacional de Investigacion y
Servicios Forestales (INISEFOR)
Universidad Nacional
Apdo. 86-3000
Heredia
Costa Rica

Phone: (506) 2773-447
Fax: (506) 2376-465

MYRTACEAE

5832 Dr Luis G. Hernández Sandoval
Herbario, Instituto de Ecología y
Alimentos
Universidad Autónoma de Tamaulipas
13 Blvd. Lope Mateos 928
Ciudad Victoria, TAM 87040
Mexico

BEAUCARNEA NOLINA
AGAVACEAE

5832 Dr Luis G. Hernández Sandoval
Herbario, Instituto de Ecología y
Alimentos
Universidad Autónoma de Tamaulipas
13 Blvd. Lope Mateos 928
Ciudad Victoria, TAM 87040
Mexico

BEAUCARNEA NOLINA
AGAVACEAE

5285 Dr Suketoshi Taba, Head
Maie Germplasm Bank
CIMMYT
Lisboa 27
Apdo Postal 6-641
Mexico, México D.F. 06600
Mexico

Phone: 5-726-9091
Fax: 5-726-7559, 595-410-69
email: staba@alphac.cimmyt,mx EA

6045 Dr Alberto Taylor
Herbarium, Departamento de Botánico
Universidad de Panamá
Estafeta Universitaria
Panamá, Panama

Phone: (507) 63-6133 X 319

FABACEAE	CYPERACEAE
POACEAE	ARECACEAE
MAGNOLIACEAE	PALMAE

4025 Mr. Nigel P. Taylor
Deputy Chairman,
IUCN/SSC Cactus & Succulent
Specialist Group
Royal Botanic Gardens, Kew
Richmond, Surrey TW9 3AE,
UK

Phone: 044/81/3325229
Fax: 44/81/3325278

CACTACEAE

5308 Ms. Sue A. Thompson
Collection Manager
Section of Botany
Carnegie Museum of Natural History
4400 Forbes Ave.
Pittsburgh, PA 15213, USA

Phone: 412-622-3295
Fax: 412-622-8837
email: thompson@clp2.clpgh.org

XANTHOSOMA	PELTANDRA
ACORUS	ARACEA
Ethnobotany	

6062 Dr Stephen S. Tillett
Herbario Ovalles, Farmacia
Universidad Central de Venezuela
Apartado 40.109, Caracas 1040A
Venezuela

Phone: (58) 2/ 619811 TO 619830
EXT 2078; 6626681
Fax: (58) 2/ 6626027

PASSIFLORACEAE

5967 Sr Eulogio De la Cru Torres
CICTAMEX, Palacio Municipal
C.P. 51700. Coatepec Harinas
Estado de México, Mexico

PERSEA

5643 Prof Baltasar Trujillo
Venezuela

CACTACEAE

5936 Sr. Oswaldo Téllez Valdés
Assistant Curator
Instituto de Biología
Herbario Nacional
Universidad Nacional Autónoma de
México
Apartado Postal 70-367
México D.F. 20, Mexico

Phone: (525) 6 22-56-92
Fax: (525) 5 50-17-60

DIOSCOREACEAE
LEGUMINOSAE

6320 Mora Urpi
Turrialba
Costa Rica

PALMAE

4158 Dr. K. & J. Utley
University of New Orleans
Biological Sciences,
Lake Front, New Orleans, LA 70122
USA
BROMELIACEAE

5807 Sr Alfonso José Vargas,
 Coordinador Diversificación
 Corporacion Bananera Nacional
 (CORBANA)
 Apdo 6504-1000,
 San José, Costa Rica

Phone: 506 763-31-76
 Fax: 506 763-30-55

BACTRIS
 Other food crops

5953 Prof. Armando García Veláque,
 Profesor Investigador
 Centro de Genética
 Colegio de Postgraduados
 56230. Montecillo
 Mexico

PERSEA

6116 Sr Giorgini A. Venturieri
 Instituto Nacional de Pesquisas de
 Amaónia
 INPA/CPCA
 Cx. Postal 478
 Manaus 69011
 Brazil

THEOBROMA

5833 Dr Susan Verhoek
 Lebanon Valley College
 Annville, PA
 USA

AGAVACEAE

4209 Ms. Jane Villa-Lobos, Coordinator
 IUCN/SI/WCMC Latin American
 Plants Project
 Smithsonian Institution
 Department of Botany, NHB-166
 Washington, DC 20560, USA

Phone: 202-357-2027
 Fax: 202-786-2563
 email: mnhb0019@si.edu
 Middle America

4225 Mr. Andrew P. Vovides
 Research Fellow
 Instituto de Ecologia, A.C.
 Apdo Postal 63, Xalapa, Ver. 91000
 Mexico

Phone: 52 28 18-60-00 X 228
 Fax: 52 28 18-69-10

CYCADACEAE ZAMIACEAE
 CACTACEAE
 Botanic Gardens

4252 Dr. Kerry S. Walter
 Royal Botanic Garden Edinburgh
 Inverleith Row, Edinburgh EH3 5LR
 UK

Phone: +44 131 552 7171 X 294
 Fax: +44 131 552 0382
 email: kwalter@rbge.org.uk

SIGMATOSTALIX
 ORCHIDACEAE
 databases

4267 Prof. Grady L. Webster
 Director Emeritus
 J.M. Tucker Herbarium
 Sect. of Plant Biology
 University of California
 Davies, CA 95616, USA

Phone: 916-752-1091
 Fax: 916-752-5410
 email: glwebster@ucdavis.edu

EUPHORBIACEAE

5853 Dr. Thomas Wendt
 Louisiana State University
 Botany Department, Herbarium
 Baton Rouge, LA 70803-1705,
 USA

Phone: (504) 388-8485
 Fax: (504) 388-6400
 email: wendt@herb03.botany.lsu.edu

LAURACEAE

6301 T. T. Th. Westra
Herbarium
Institute of Sustematic Botany
State University of Utrecht/3508 TC
Utrecht 80.102
Netherlands

ANNONACEAE

6168 Dr Mark P. Widrlechner
U.S. Dept. of Agriculture,
Agricultural Research Service
North Central Regional
Plant Introduction Station
Iowa State University
Ames, IA 50011
USA

Phone: 515-292-6507
Fax: 515-292-6690
email: nc7mw@ars-grin.gov

RUBUS	AGASTACHE
medicinal plants	databases
food crops	

5983 Dr. J. Trevor Williams
1 Scott Circle, NW #102
Washington DC 20036
USA

6105 Dr David E. Williams
Research Associate
USDA, Agricultural Research Service
National Germplasm Resources
Laboratory, Bldg. 003, Rm. 400
BARC-West, Beltsville, MD 20705
USA

Phone: (301) 504-6310
Fax: (301) 504-6305
email: peodw@ars-grin.gov

ARACHIS
ethnobotany

6139 Prof. Hugh D. Wilson
Department of Biology
Texas A & M University
Butler Hall, rm. 306
College Station, TX 77843
USA

Phone: 409-845-3345
Fax: 409-862-1977
email: r551hw@tamvm1.tamu.edu

CHENOPODIUM CUCURBITA
CHENOPODIACEAE
CUCURBITACEAE
databases

6034 Mr. Don Windler
Herbarium, Biology Dept.
Towason State University
8000 York Road
Baltimore, MD 21204
USA

LEGUMINOSAE

6052 Ing. Cecilia C. Xifreda
Facultad de Ciencias Naturales y
Museo Laboratorio de Ethnobotánica
y Botanica Aplicada
Comision de Investigaciones
Cientificas Provincia de Buenos Aires
Paseo Del Bosque s.n.
La Plata 1900, Argentina

Phone: (54) 21 3-9125
Fax: (54) 21 25-7527

DIOSCOREACEAE
APOCYNACEAE

6299 David Young
Herbarium
Santa Barbara Botanic Garden
1212 Mission Canyon Road
Santa Barbara, CA CA 93105
USA

ANACARDIACEAE

5878 Dr. N. Amora
Herbario Nacional
Museo Nacional de Costa Rica
Apartado 749-1000
San José, Costa Rica

Phone: (506) 57 14 33 X 42
Fax: (506) 33 74 27

FABACEAE LEGUMINOSAE

5094 Dr. James L. Arucchi
Missouri Botanical Garden
P.O. Box 299
St. Louis, MO 63166, USA

Phone: 314-577-5162
Fax: 314-577-9596
email: arucchi@mobot.org

LEGUMINOSAE APOCYNACEAE

6308 A. Heredia epeda
Apartado 112 Celaya
Guanajuato
Mexico

CACTACEAE

6167 Ir. Walter de Boef, Programme
Coordinator
CPRO-DLO Centre for Genetic
Resources
P.O.Box 16
Wageningen 6700 AA
Netherlands

Phone: 31 8370-77076/45
Fax: 31 3370-18094
email: w.de.boef@cpo.agro.nl

In/ex situ conservation

6084 Dr. Fermín de la Puente
Departamento de Recursos Geneticos
Centro Internacional de la Papa
Apartado 5659
Limu
Peru

IPOMOEAE

4453 Dr. Henk van der Werff
Herbarium
Missouri Botanical Garden
P.O. Box 299
St. Louis
Missouri 63166
USA

LAURACEAE



**WORLD CONSERVATION
MONITORING CENTRE**

World Conservation Monitoring Centre
219 Huntingdon Road
Cambridge CB3 0DL
United Kingdom

Telephone +44 223 277314
Fax +44 223 277136

IUCN
The World Conservation Union



The World Conservation Monitoring Centre is a joint-venture between the three partners who developed the *World Conservation Strategy* and its successor *Caring for the Earth*: IUCN-The World Conservation Union, UNEP- United Nations Environment Programme, and WWF-World Wide Fund for Nature.